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Nekoosa-Edwards To Erect New Bleach Plant

Construction Will Start At Once On New Plant To Cost More Than $500,000—New Unit Will More Than Double Present Output of Bleached Kraft Pulp — Signs Unemployment Bill — Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., June 25, 1945—Nekoosa-Edwards Paper Company will start construction immediately on a new bleach plant and water filtration plant at Nekoosa, Wis., John E. Alexander, president and general manager, announced Tuesday, June 19. The War Production Board has approved the project, and the general contract has been let to the Frank J. Henry Engineering Company, Wisconsin Rapids, Wis.

Total cost will be in excess of $500,000. The new unit will more than double the volume of bleached kraft pulp now being produced in the Nekoosa mill, and an improved bleaching process will result in pulp of a far superior quality, both as to strength and brightness.

The company's chemical pulp mill at Nekoosa has a present kraft pulp capacity of 150 to 160 tons in 24 hours, about 25 to 40 tons daily being manupfactured in the full bleach grade, 55 to 60 tons in semi-bleached, and the remainder in the unbleached grade.

About 60% of the present production is bleached grades, but only about 25% of the total production is manufactured in the full bleached grade. Upon completion of the project, Nepco will be enabled to produce 75 to 90 tons of full bleached pulp per day, the balance semi-bleached.

Provision is being made, with a comparatively small capital expenditure later, to increase the full-bleach capacity to 150 to 160 tons per day. The new bleaching system will be furnished by the Improved Paper Machinery Corporation of Nashua, N. H., and is known as the six-stage process.

The building housing the bleaching equipment will be 68 by 72, with basement and four floors. The filtration building will be 52 by 75 with basement and first floor. Both buildings will be of the same type of construction, reinforced concrete foundations and floors; structural steel roof trusses, purlins, columns; brick walls; glass block windows; precast concrete roof tile; asbestos and asphalt builtup roofing.

The filtration plant will assure the practically colorless water necessary in the bleaching process. It will be of the gravity type construction as manufactured by the International Filter Company of Chicago. It will have a filtration capacity of 3,600 gallons per minute, with ample provision for later expansion, if needed, to a capacity of 8,400.

At present, the company is pumping water from its Nepco lake at the rate of about 38,000,000 gallons per day, which is more than is consumed daily by the city of St. Paul, which has a population of more than 300,000 inhabitants. Water delivered to the filter plant from the main line now supplying the Nekoosa mill, will be treated with a small amount of chemical. After passing through the coagulator, it will be delivered to the filter beds, from which it will go to a clear-well directly underneath the filter bed. Thence it wil be pumped to the bleach plant.

The increased tonnage of full bleached kraft pulp will be used in both the Nekoosa and Port Edwards paper mills, and enable the company to expand production of kraft specialties and specification papers, as well as to continue production of present grades, but of far better quality.

Nekoosa-Edwards has acquired four separate timber contracts in Canada, and is thus assured several million cords of pulpwood, the greater part of which is spruce. The Canadian holdings will be operated by a new wholly-owned subsidiary, the Alexander-Clark Timber Company, Ltd., with headquarters at Port Arthur, Ontario. The large cordage will permit the cooking of spruce in far greater quantities than heretofore.

In addition to the Canadian holdings, the company during the last year has acquired about 50,000 acres of cutover pulpwood lands in Oneida County, Wisconsin, to which it will extend its reforestation program. This area is developing growth to provide from 12,000 to 15,000 cords of pulpwood annually. In addition, the company has extensive holdings within 25 miles of its mills. The company started its forestry program in 1925, and its Wisconsin holdings alone total more than 100,000 acres. Plantings of 15 years ago have trees ranging up to 9 inches in diameter, breast-high, and some of the trees are 30 feet high.

Plan to Renew Labor Contract

The International Brotherhood of Papermakers, the International Brotherhood of Pulp, Sulphite and Paper Mill Workers (AFL) at the Badger-Globe and Lakeview mills, Neenah, and Kimberly-Clark Corporation have completed negotiations for renewal of the 1945-46 contract, E. B. Lambton, regional director of the papermakers' union announced last week. Approval of the Regional War Labor Board is still required.

The agreement calls for an increase of 7 cents per hour for about 250 women workers on men's jobs when the quantity and quality of the work is equal to the work of men. Full starting rates will be paid to union members who receive promotions to other jobs.

(Continued on page 18)

Canadian Association Holds Summer Meeting

More Than 300 Attend Session At Quebec City—Dryden To Open New Recovery Plant Soon—Paper Industry Leads In Use of Power — Plan To Develop the Forest Wealth In Maritime Provinces.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., June 25, 1945—The summer meeting of the Canadian Pulp and Paper Association was held in Quebec City during the past week, and proved very successful, over 300 delegates attending.

Robert M. Fowler, the president, speaking at a banquet held in the Chateau Frontenac, emphasized the good work the association was doing, not only for the industry but for the development of the economic life of the Dominion as well. He said the association was not planning to create or promote large industries, but to support and aid small industries. "The association is not a monopoly nor the protector of a monopoly," he said, "but a rampant against monopolies."

During the meeting Col. the Hon. John S. Bourque, provincial Minister of Lands and Forests, said that last year forestry industries in Quebec province put $55,000,000 into the workers' pay envelopes, and declared himself firmly of the opinion that forest production in the province could be doubled.

"There is a freshly-awakened attitude towards forest and river conservation," he continued. "The people of Quebec are now building a bridge, which may have already been crossed, from the old era of waste and extravagance into the new era of vigilant conservation, and are now firm partisans of forest protection. We must not ruin our forests by fire or in any other way. We cannot destroy our forests and still retain Quebec's top position in the pulp and paper industry and as a great hydro-electric power producer. Nor can we expect a flow of tourist dollars if we sacrifice the beauty of our woods and waters and our wild life."

Dryden to Open New Plant Soon

From the office of the Dryden Paper Company here it is learned that the company's new recovery plant at its mills at Dryden, Ont., will be in operation some time this summer. It replaces the outdated recovery room hitherto in use. It is a six-story building and houses, besides furnace and boiler (which combined are 78 feet in height), two strong-liquor storage tanks each holding 10,000 gallons; and 18-foot-high salt cake storage bin and conveyor and six huge evaporators, besides an enormous "cascade" evaporator. There are 38 electric motors ranging in size from 150 h.p. down to ⅓ h.p. and between 10,000 and 15,000 feet of piping ranging from 8 inches in diameter down to ½ inch. Fluorescent lighting is used throughout the interior.

Most of the construction work was done by the company's own construction men, from plans drawn up in the engineering office. The mills have a capacity of 30,000 lbs. of kraft sheathing paper and 80,000 lbs. of kraft and manila wrapping paper per 24 hours. The ground wood mill has a capacity of 28,000 lbs. per 24 hours, and the sulphate mill a capacity of 200,000 lbs. of sulphate fiber.

Industry Leads in Use of Power

According to the annual report of the Dominion Water and Power Bureau, the pulp and paper industry provides the greatest individual peacetime market for power produced at electric stations in Canada and in addition pulp and paper mills have an aggregate hydraulic installation of 642,576 h.p., or 6.3% of the total.

Ordinarily the industry purchases more than 40% of all power sold for industrial purposes. During the war years this percentage was reduced to 25%, due to the diversion to munitions production of great amounts of power formerly used by the pulp and paper industry.

The growth of water power development in Canada from 1900 to the present time is indicated in that total water power installation has grown from 143,156 h.p. at January 1, 1900, to 10,283,763 h.p. at January 1, 1945. The average installation per 1,000 population is shown to be 859 h.p., a total which places Canada in an outstanding position among the waterpower-using countries in the world.

Plan to Develop Forest Wealth

Much attention is currently being devoted to plans for the development of the forestry industries of the Maritime Provinces, a major economic asset of both New Brunskick and Nova Scotia. Special attention is being devoted to this asset by Government committees surveying the economic potentialities of the two provinces.

The total value of forest products shipped from New Brunswick in 1944 is officially reported to be $72,000,000. During the year the six pulp and paper mills in the province used 927,000 cords of pulpwood and operated to about 90% of capacity. The value of the products of the pulp and paper mills was estimated at $35,000,000, sulphite pulp being the most important item produced. A disquieting feature was that forest fire losses and damage in 1944 were greater than in any previous year since 1928. About 85% of the damage was caused by fires attributed to lightning. Total dollar value of estimated damage and fire fighting wages was $1,450,000.

The New Brunswick Government committee has recommended a comprehensive program of conservation and development, at a total estimated cost of $11,150,000, and some of the recommendations have already been implemented by legislation. For instance, a sum of $100,000 has been appropriated for constructing and equipping a forest ranger school in connection with the University of New Brunswick, and the total cost of the school when all arrangements are completed is put at around $250,000.

In Nova Scotia, the forest products industry ranks third among the primary industries of the province. Attributed largely to careless smokers, forest fires last year drestroyed 39,199 acres of forest and there was much damage by insects. Recently the Nova Scotia Department of Lands and Forests appointed an entomologist to work on problems relating to forest insects.

Here also a governmental committee has presented a comprehensive program for conservation and for encouragement to the establishment and growth of forest industries.

OLIVER SAVEALL

3 Types of Dischargers

- HYDRAIR
- OLIVER DENHARD
- DISCHARGE ROLL

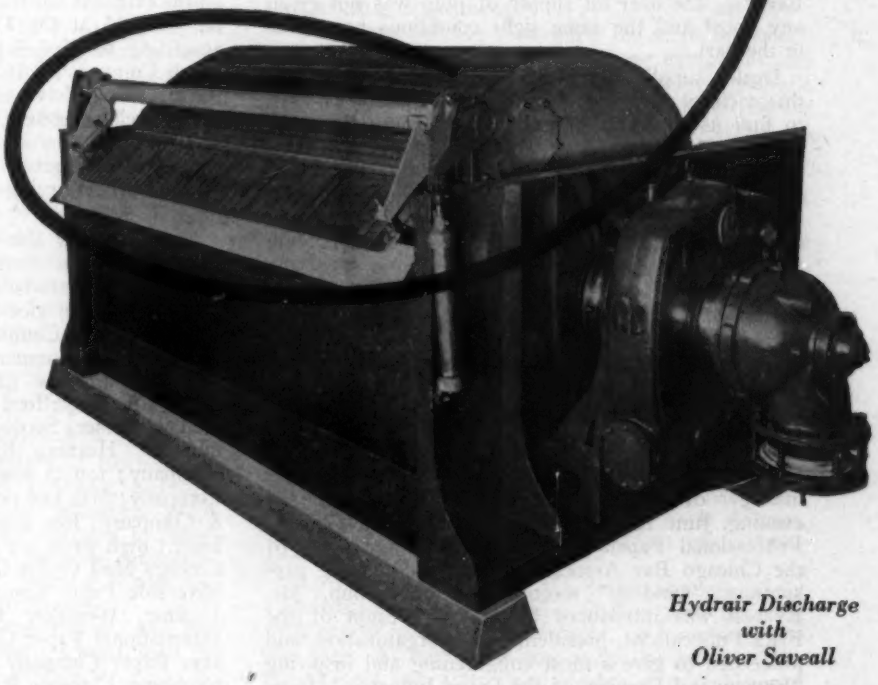
IN A VACUUM SAVEALL the sheet discharger is important because efficient removal of the stock from the drum is necessary for uniformly high capacity.

The purchaser of an Oliver Saveall gets the proper discharger for best operation on his particular stock.

1. Hydrair—A doctor with a series of water jets beneath so directed as to create a pressure under the sheet lifting it off the wire onto the doctor.

2. Oliver Denhard—Forms the sheet into a roll which couches the sheet off the wire. A scroll continuously removes the stock. Nothing touches the wire except the sheet.

3. Discharge Roll—Leads sheet from the drum over a driven fluted discharge roll.



Hydrair Discharge with Oliver Saveall

The purchaser has his choice of Rubber Covered or Cast Iron-Wood Stave construction. He gets the advantage of the Oliver Automatic Drum Speed Control (actuated by liquid level in the vat). He also gets a Saveall that operates with consistent results without the need of technical attention.

* * *

Today's Oliver is the practical saveall for the mill aiming for maximum recovery of fibers at the lowest possible cost.

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Western Sales Division
Oakland 1, California
2900 Glascock Street

Canada: Sales & Manufacturing Representative: E. Long Limited, Orillia, Canada

Factories: Oakland, Calif., Hazleton, Pa., Orillia, Canada, Melbourne, Australia

Chicago Reports Very Low Paper Supply

Substitutes For Standard Grades of Papers Now In Tight Supply—Waste Paper Collections Well Above Normal — D. C. Everest Draws Big Audience—Salesmen Hold Golf Outing—Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., June 25, 1945—The paper market here prepared to face the mid-summer months with little indication of any marked improvement in any phase of the markets operations. Less pulp and increased demands for pulp made the combination rather unfavorable for the near future. There was some relief in local sales offices over WPB permission to mills to do their own inside allocating as far as their available pulp was concerned. The latest orders, giving this permission, permit mills to plan a bit better and to speedup their operations to the extent that they can now go ahead and determine their own usage of available pulp without wiring for approval. Even so, the over all supply of pulp was not given any boost and the same tight conditions prevail as in the past.

Dealer supplies were reported at a record low in this vicinity with substitute papers equally as hard to find as the "initial" selections. With all of the difficulty, however, local paper merchants have done a surprisingly excellent job in satisfying customers and in holding their organizations together for future business. The cash positoin of dealers is excellent and the future bright when the market begins moving again.

Waste paper collections in this area were far above normal and special incentives are being provided to keep school and other non-professional collecting agencies going through the summer months.

D. C. Everest Draws Huge Crowd

An unusually large audience of members and guests greeted D. Clark Everest, president and general manager of the Marathon Corporation on Monday evening, June 18, when he spoke before the Chicago Professional Paper Group in the dining rooms of the Chicago Bar Association. Speaking at the pre-summer "wind-up" meeting of the Group, Mr. Everest was introduced by Harry Weston of the Fritz Publications, president of the organization, and proceeded to give a most enlightening and inspiring "Review and Preview of the Paper Industry." Inasmuch as the paper industry goes on the premise that what is done is done, the speaker engendered the most interest by outlining what is ahead of the industry in the post-war period.

He spoke both interestingly and professionally on the improvements in technique and operations which the industry was quietly but consistently developing in this trying period, and dwelt on the potential markets which were in the path of the industry if it plays its cards intelligently, persistently and cooperatively. Himself one of the leading pioneers in research work within the paper trade, Mr. Everest led his audience from one development to another and pointed out the potentials which were predicted on the foresight of those who had, to date, worked so hard to make paper a ranking war time product. New developments which mean more resiliency, more durability, less weight and more color and romance in the quality of paper itself were likewise given careful treatment by the former president of the American Pulp and Paper Association. It was a most timely message delivered at a most critical period in the growth of the paper industry. It had, according to all reports, the ring of sincerity and hope which the industry must have to carry it full speed into the post war period to come.

Salesmen Hold Golf Outing

Sixty golfers and seven members who participated only in the dinner program, enjoyed the first of the two golf outings which the western division of the Salesmen's Association of the Paper Industry has on the calendar for this summer. The outing was held on June 15 at the Park Ridge Country Club and, according to Jim Sensenbrenner of the Kimberly-Clark Company, golf chairman, was one of the best the SAPEYS have yet held. Prize winner news is pretty well relegated to the background through the fact that Jim Coy of the Flambeau Paper Company shot the high gross score—only 126 strokes—and seems bent on trying to suppress all the rest of the news!

Mr. Coy was also — perhaps understandably — a member of the foursome which won high gross honors, the others being Pat Patterson of Flambeau, western division vice president; C. B. Engh, Dwight Brothers Paper Company and E. D. Buchanan of the Moser Paper Company. Other prize winners were as follows: Low gross, Gene Hommes, Graham Paper Company; first low net, Gene Todd, Bermingham & Prosser; Second low net, G. L. McCloud; third low net, Herman Berge, Appleton Coated Paper Company; fourth low net, Ray Lamy, Lamy Paper Company; fifth low net, Ed Hayburn, Bradner, Smith & Company; low gross on one selected hole, C. B. Engh; high gross on selected hole, George Cullinan, Chicago Mail Order Company; low putts, Bill Jones, Riverside Paper Company; low net foursome, C. C. Haffner, Whitaker Paper Company; Stub Early, International Paper Company; Bruce Crocker, Whitaker Paper Company and Herman Berge; low putts foursome, Clarence Rasmussen, Chicago Paper Company; Carl Trost, Hollingsworth & Whitney; Arthur Brown, Nekoosa-Edwards Paper Company and B. L. White.

The next and final outing of the SAPEYES will be held at the Olympia Fields Country Club on August 8. Chairman Sensenbrenner is going to send the announcements out early and indicates that the wind-up event will be bigger and better than any yet held.

"Old Man River" Carries Paper Load

Traffice on the Mississippi River between Minneapolis and the mouth of the Missouri River reached the new high mark of 4,844,640 tons in 1944 according to statistics compiled by the United States district engineer. Included among the substantial tonnage items were 19,819 tons of sisal fibre and 20,218 tons of printing paper, both representing shipments of real value to points along this waterway route.

WPB Watches Fibre Container Use

The present urgency existing in the supply of new fiber containers is being closely watched by the New York Regional Office of the War Production Board, it was revealed this week by Philip S. Hardy, regional compliance manager, WPB, New York City.

Under the terms of Limitation Order L-317, all shippers who use new fiber shipping containers are required to operate on a quota basis and in accordance with a list established by WPB of products permitted to be packed in new fiber containers. L-317 defines the limits within which a packer may accept new fiber Containers. Direction 3 to the order prohibits a packer from accepting deliveries unless these limits have been established on an individual basis. In this connection, the WPB Regional Office is investigating all packers who come within the jurisdiction of the order to make certain that the limited supply of new fiber containers is used only for authorized purposes in the present shipping crisis.

WPB field investigators check constantly on the packers to see that they operate within allowable quotas. When a violation is discovered, a "stop-order" telegram is sent by WPB to the packer, preventing him from accepting any further deliveries of new fiber containers. He cannot then accept any more new fiber shipping containers until WPB establishes for him in writing his base period usage for such containers.

If the stop-order telegram is not obeyed, WPB can move against the violator under the terms of the Second War Powers Act and bring criminal action through the United States District Court. Thus far it has only been necessary to take administrative action against violators in the local region, where over-use of new fiber shipping containers has been a problem because of an extremely tight supply since the middle of 1942.

H. K. Porter Opens Buffalo Office

BUFFALO, N. Y., June 25, 1945—The removal of H. K. Porter Company, Inc. offices in Rochester to headquarters in the Walbridge Building, has been announced by W. W. Calihan, sales manager. W. A. Coyle has been appointed district manager in charge of sales for Porter and Devine process equipment. He will also handle sales for Quimby pumps and Fort Pitt steel castings in the territory.

Mr. Coyle, who had been employed for the past ten years as assistant combustion engineer with the Republic Steel Corporation in Buffalo, received his BSEE Degree at Clarkson University of Technology and his Masters' at Lehigh University. A member of the Engineering Society of Buffalo, and the Iron and Steel Engineers Society, he holds a New York State Professional Engineer's License.

Pennsylvania Salt Advances Murphy

PHILADELPHIA, Pa., June 25, 1945—Frank E. Murphy, formerly assistant to manager of research and development department, has been appointed director of development division, research and development department, Pennsylvania Salt Manufacturing Company. In his new position Mr. Murphy will have charge of chemical engineering activities including pilot plant operations, engineering research and related fields of work. He will be located at Whitemarsh Research Laboratories, though a substantial amount of the work involved will be carried out at various other plants of the company.

B-F-D Plans Ogdensburg Improvements

OGDENSBURG, N. Y., June 25, 1945—Rehabilitation of the huge former Algonquin Paper Company plant at the west end of the city by the B-F-D Company, owners of the property is well under way, with bright prospects for post-war operation of the industry. S. S. Stevens, Plattsburg, manager of the pulp and paper division of B-F-D said that probably at least 600 men will be employed at the B-F-D plant here when the additions are erected and the plant is in full production. The new construction will be on the high portion of the paper mill property, and the large building planned there will have facilities for converting the paper made at the plant into finished products, ready for the consumer. There will be a bleach plant, offices and other departments in this new building. Work has been under way for several months on the present plant which has 200,000 sq. ft. floor space.

Donald A. Hunter, superintendent of the Ogdensburg division of B-F-D, is in charge of the plant and is directing the renovation of the plant. Engineering is in charge of J. O. Julson, Plattsburg, chief of the engineering department.

The plans call for revamping the sulphite system, putting in new screens and washing equipment and digester circulator. The net result will be a sulphite plant that is probably the most modern in the northeastern part of the United States. The ground wood plant will be renovated to some extent, but will remain basically the same it has in the past.

Post-war plans of B-F-D call for integrating this mill with machinery for paper manufacture, converting the paper made at the mill into the finished product. Meanwhile, the pulp produced here will be transported to the B-F-D plant at Plattsburg for conversion to finished products for the market.

Zeckhausen Leaves WPB

NEW YORK CITY, June 18, 1945—Paul W. Zeckhausen, who has been directing conservation and salvage activities of the War Production Board New York District Office since January 1942, has resigned to become assistant to the president of Northfield Mines and affiliated companies, 230 Park Avenue, engaged in the production of all types of minerals and chemicals.

During his WPB tenure Mr. Zeckhausen effectively coordinated all local activities dealing with the vital problems of salvaging waste paper, tin cans, used fats and rags. Accepting the post at the invitation of the government soon after Pearl Harbor, Mr. Zeckhausen was recently complimented by Julius A. Krug, WPB Chairman, on having done an outstanding job.

Clinton S. White, regional salvage manager, will serve as acting district chief of the WPB District Salvage Department and under Mr. White's direction all salvage activities will be maintained in order to return to production the critical materials so urgently needed for vital war purposes.

Jones Joins Victory Bag and Hanger

Edward H. Jones who, for the past five and a half years has been associated with the Mutual Paper Company of New York as assistant sales manager and later as production manager as well, is now connected with the Victory Bag and Hanger Corporation of Brooklyn, N. Y. His new position as sales manager for that company, carries responsibility for the sale of laundry and dry cleaners' items to jobbers and supply houses.

Kinney to Retire from Hercules

WILMINGTON, Del., June 25, 1945—C. E. Kinney, assistant to the director of operations, Naval Stores Department, who for the past 40 years has been associated with the wood naval stores industry, will retire on June 30, it was announced today by Hercules Powder Company. During the past 25 years, "Doc" Kinney has played an important part in the growth and development of the department. His work also gave him an opportunity to work again with the paper industry. He was named manager technical service, then assistant to the director of sales, and since July, 1939, he has been assistant to Arthur Langmeier, director of operations, Naval Stores Department.

Mr. Kinney is a member of the American Chemical Society, Technical Association of Pulp and Paper Industry and the American Society of Testing Materials. Mr. and Mrs. Kinney plan to return to Kansas City early in August, where they will make their home.

Honegger Heads Buffalo Plant

BUFFALO, N. Y., June 25, 1945—Farrel-Birmingham Company, Inc. has announced the appointment of Robert M. Honegger as general manager of the company's gear plant at Buffalo. Mr. Honegger received both his early and technical education in his home city, and first became associated with the Farrel organization in 1925 as a member of the engineering department. In 1935 he was made general foreman and shortly after became plant superintendent, which position he held until the present appointment.

Mr. Honegger, in his present capacity, succeeds Lester D. Chirgwin, formerly of Buffalo and now of Ansonia, Conn. In March 1945, Mr. Chirgwin was elected vice-president in charge of manufacturing in all four Farrel-Birmingham plants located at Ansonia, Derby and Stonington, Conn., and Buffalo.

Dicalite Names Blunt and Crossin

R. W. Blunt has been appointed manager of the Philadelphia district and E. V. Crossin manager of the Pittsburgh district, it was announced by A. G. Frankenhoff, vice-president and general manager of the Dicalite Company.

Both men were born in Ohio and attended college and university in that state. Before joining the Dicalite organization Mr. Blunt was with the Kieckhefer Container Company in Parkersburg, W. Va., and before that had been with the Ohio Boxboard Company, Rittman, Ohio. Mr. Crossin's work for the last thirteen years has been along engineering lines, with the A. W. Burns Construction Company, and Columbia Engineering Corporation, both of Columbus, Ohio.

Quaker Paper Men Play in the Country

PHILADELPHIA, Pa., June 25, 1945—The Philadelphia Paper and Cordage Association held its annual all-day outing at Manufacturers' Country Club, Oreland, Pa., on Thursday last. Seventy-six members and guests met for lunch and at dinner eighty-nine participated. Among the activities scheduled for the day's outing were golf, quoits, swimming, and cards.

After a most enjoyable day, climaxed with dinner and a floor show, fifteen lucky men carried off attractive prizes as results of their skill.

Warner Moves Up in M. & O. Paper Sales

MINNEAPOLIS, Minn., June 11, 1945—Rondeau O. Warner has been appointed sales manager of the paper division for Minnesota and Ontario Paper Company, effective June 15, by C. T. McMurray, Mando vice president in charge of sales. Prior to his new appointment, Mr. Warner had been manager of merchant sales for the company since 1938, with headquarters in Chicago.

Mr. McMurray also announced the appointment of Paul Joslin, a member of the M & O sales staff since

RONDEAU O. WARNER

1935, as manager of the Chicago sales office. This office, he said, will handle local sales, Mr. Warner's association with Mando dates back to 1913, and in the intervening years he gained wide experience in many branches of the company's activities. He joined the M & O as timekeeper in that year, and in 1916 was placed in charge of the finishing room at the Fort Frances mill, later, shifting to the order desk. In 1919 he went with the Shevlin-Clark company at Fort Frances, but returned within two years to the M & O, where he was placed in charge of the order desk.

Mr. Warner moved to Minneapolis in 1932 as assistant sales manager in the newsprint division and later was assigned to merchant's sales. He remained in that position until his transfer to the Chicago office in 1938.

Pennsalt PM-90 Cleans and Descales

A specially prepared acid cleaning and descaling compound known as Pennsalt PM-90, has recently been developed by the Research and Development department of Pennsylvania Salt Manufacturing Company.

Pennsalt PM-90 contains addition agents for surface action and inhibition. It is primarily used as a pickling bath concentrate in electroplating shops and as an acid cleaner for removing water scales from boilers and industrial equipment.

Packaged in 115 lb. returnable carboys, Pennsalt PM-90 is available in commercial quantities through the Special Chemicals Division of the Pennsylvania Salt Manufacturing Company, Philadelphia 7, Pennsylvania.

"Riding Comfort"

FOR INDUSTRIAL MACHINES

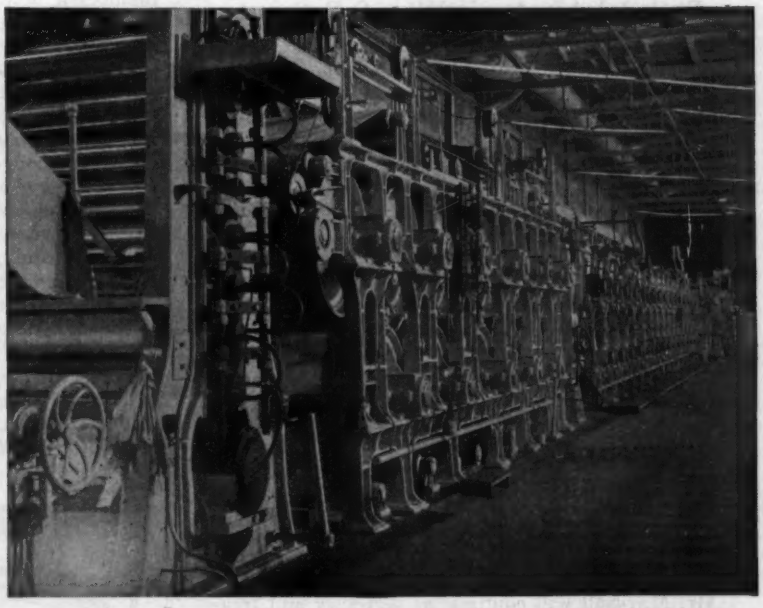
Smooth operation, and freedom from shocks and vibration, are just as important in your heavy-duty machines as they are in your motor vehicles.

Now, for the first time, you can give your machines true air-cushioned "riding comfort" with the Fawick Airflex Clutch.

This new clutch controls power and torque through a cushion of air and rubber. Regulated inflation gives you clutch engagement as light or as firm as the job demands. There are no springs, arms or toggles, no adjustments to make, no lubrication required. Misalignment is corrected automatically. Maintenance costs are usually low. Both drive and driven members have new nonmetallic safety and protection.

Our experienced engineering department will gladly give you recommendations for your machines.

THE FAWICK AIRFLEX CLUTCH provides air-cushion clutch action because it matches today's fine motor vehicle tires in quality of material and excellence of workmanship — the result of the great technical advances made by America's Rubber Industry.



Paper mills equipped with Fawick Airflex Clutches have new smoothness of operation, to protect the web. Uniform quality is maintained and operating costs greatly reduced.

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Tissue Industry Honors John Maloney

HOT SPRINGS, Va., June 19, 1945—John Maloney, general sales manager for Hoberg Paper Mills, Green Bay, Wis., was honored with a testimonial dinner June 14th at the Homestead hotel and a gift from the tissue industry in recognition of his three years of service as a dollar-a-year consultant for tissue paper in the Pulp and Paper Section of the War Production Board. John Maloney's service to country and industry represented the longest continuous service in the Pulp and Paper Section by any paper executive.

A testimonial letter from Walter Wilcox, retiring chief of the Pulp and Paper section outlining John Maloney's contribution to the WPB was read at the dinner. C. E. O'Connor, Jr., of B-F-D company acted as toastmaster; Mr. John McKirdy, Jr. of Scott Paper company made the presentation of the testimonial; B. I. Reider of Victoria Paper Mills was joint chairman of the committee on arrangements with W. J. Servotte of Bay West Paper Company. The meeting was attended by a large number of executives of the industry, and representatives of the armed services.

Philadelphia Again Wins S Pennant

For promoting the collection of 20,111 tons of waste paper during May, the Philadelphia Council of Defense salvage committee has been awarded the War Production Board S pennant for the third consecutive month, Thomas W. McDonough, assistant executive secretary of salvage in Pennsylvania announced during the week.

The pennant is awarded to the county collecting a per capita of 20 pounds or more of waste paper. Although May collection was 818 tons less than April's the city is still over 20 pounds per capita. Total paper collection in Philadelphia during 1942, 1943 and 1944 was 227,000 tons.

Clarke Succeeds Marshall at Nashua

NASHUA, N. H., June 25, 1945—John R. Marshall, who has been manager of Canadian Nashua Paper Company since September 1, 1927, asked to be relieved on account of his health. In deference to his wishes and advanced years, his resignation was reluctantly accepted. E. G. R. Clarke, previously sales manager of this Canadian company, was appointed to succeed him.

Mr. Marshall will continue as secretary and treasurer. A well deserved testimonial party was held for him in Peterborough in recognition of his able management.

Oxford Bids $6,700,000 for Maine Seaboard

PORTLAND, Me., June 26, 1945—The Oxford Paper Company of Rumford has made a bid of $6,700,000 for the Maine Seaboard Paper Company of Bucksport, newsprint manufacturing subsidiary of New England Industries, Inc.

Oxford was the lone bidder. The Eastern Corporation of Brewer, which asked for a seven-day extension of bidding time last week when all of New England Industries' properties were offered for sale, announced that it would not submit a bid.

The $6,700,000 bid included the plant, title to 200,000 acres of timberland and a small steam turbine plant owned by the Central Maine Power Company at Augusta.

WPB Eases Restrictions on Pulp

WASHINGTON, D. C., June 25, 1945—Pulp supplies to paper mills are no longer subject to segment allocation except for those amounts being reserved for wrapping paper, grocery bags, multi-walled bags, containerboard and waterproof paper, members of the Paper Cup Industry Advisory Committee were informed this week, the War Production Board said today.

Except for these specific allocations, any paper mill may use pulp to make any type of stock that management decides to produce, WPB representatives explained. It is believed that manufacturers of paper cups will have no difficulty in obtaining sufficient supplies of stock to maintain their present rate of production. In fact, it is believed in some quarters that they will be able to obtain more stock than they did in earlier periods of this year.

Industry representatives expressed some concern on this point, but were assured of help from WPB should they experience any difficulty in obtaining materials.

Bristol Offers New Controller Series

The Bristol Company, Waterbury 91, Conn., announces a new series of electric-type potentiometer controllers. Five basic control unit types are available. Three are electric contact types to be known as the microact controllers and the other two are electric proportioning and current input types. The control units are mounted on the internal panel of the Bristol pyromaster potentiometer recorder and any type may be readily converted to any other type by following simple wiring and mounting instructions.

The three microact units are provided with one, two, and three precision-type toggle switches respectively and six different terminal board connection arrangements to meet a wide assortment of control circuit requirements.

Proportioning controllers may be used with any type of electric proportioning valve and may be had with resetting contacts if required.

The complete line is fully described with photographs, diagrams, and load wiring circuits in a new Bulletin PB1226 available from the manufacturer.

MANSFIELD AND GREEN DEVELOP NEW GAUGE

A new multi-purpose pressure gauge tester developed by Mansfield and Green, Cleveland, combines for the first time in a single unit a pressure gauge tester that can be used with equal facility for bench testing and for portable testing in the field.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending June 23, 1945

STOCKS

	High	Low	Last
A. P. W.	7½	6¾	7
Armstrong Cork Co.	48	46⅞	47¼
Celotex Corp.	17⅜	17	17⅛
Celotex Corp., pf.	21¼	20½	20¾
Certain-Teed Products Corp.	11¼	10⅝	11
Certain-Teed Products Corp., pf.	161	159½	161
Champion Paper & Fibre Co.	38⅞	37	37
Champion Paper & Fibre Co., pf.	110½	110	110½
Congoleum Nairn Co.	30⅛	29⅝	29¾
Container Corp. of America	29¾	29	29
Continental-Diamond Fibre Co.	14	12⅛	13¾
Crown-Zellerbach Co.	24	23½	23⅝
Crown-Zellerbach Co., pf.	104	103½	103¾
Dixie Cup Co.	29	28	29
Dixie Cup Co.—A.	48½	48⅛	48½
Flintkote Co.	30⅜	28⅝	29¾
Flintkote Co., pf.	109	108½	109
Robert Gair	7⅜	6¾	7⅛
Robert Gair, pf.	18¼	17⅝	18¼
International Paper Co.	29⅜	27⅞	28⅜
International Paper Co., pf.	99⅛	97	98½
Johns-Manville Corp.	128	125	126½
Johns-Manville Corp., pf.	...	...	...
Kimberly-Clark Corp.	48½	48¼	48½
Mac Andrews & Forbes	33⅛	33	33
Mac Andrews & Forbes, pf.	152	152	152
Masonite Corp.	45¼	44¾	44⅞
Mead Corp.	15¼	14¾	15¼
Mead Corp., pf. A—6%	...	...	...
Mead Corp., pf. B—5½%	100½	99½	100
National Container Corp.	15⅞	15¼	15⅜
Paraffine Companies, Inc.	...	...	...
Paraffine Companies, Inc., pf.	...	...	...
Rayonier, Inc.	23¼	18½	22¾
Rayonier, Inc., pf.	37½	36⅝	36⅝
Ruberoid Co.	38	36¾	36¾
Scott Paper Co.	50½	48	48
Scott Paper Co., pf.	113½	113½	113½
Sutherland Paper Co.	34⅛	34¼	34⅛
Union Bag & Paper Corp.	18½	17	18¼
United Paperboard Co.	7⅞	7⅜	7¾
U. S. Gypsum Co.	93¼	91	93
U. S. Gypsum Co., pf.	194	194	194
West Virginia Pulp & Paper Co.	30⅞	29	30½
West Virginia Pulp & Paper Co., pf.	111	110	111

BONDS

Abitibi Pulp & Paper Co. 5s '53	103¼	102	102⅞
Celotex Corp. 3¾s '55	...	...	...
Certain-Teed Products Corp. 5½s '48	...	...	...
Champion Paper & Fibre Co. 4¾s '50	...	...	...
International Paper Co. 6s '55	107⅝	107½	107½
International Paper Co. 5s '47	104⅜	104½	104½
Mead Corp. 3½s '53	...	...	...
West Virginia Pulp & Paper Co. 3s '54	...	...	...

New York Curb Exchange

High, Low and Last for Week Ending June 23, 1945

STOCKS

	High	Low	Last
Great Northern Paper Co.	42	40½	42
Hummel-Ross Fibre Corp.	9¾	9¼	9¼
St. Regis Paper Co.	6¾	6¼	6½
St. Regis Paper Co., pf.	...	...	...
Taggart Corp.	6¾	6½	6½

BONDS

American Writing Paper Co. 6s '61	101¾	101	101

Paper Company Profits Up

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., June 25, 1945—In a study of profit statistics of 323 Canadian companies, issued by the Bank of Canada, are included the figures of 17 pulp and paper companies. These show that the combined net income applicable to shareholders rose materially early in the war, but has since fallen off to some extent.

As compared with the net income to stockholders of $2,000,000 in 1939, the total of these 17 companies rose to $10,200,000 in 1940, and increased to $10,300,000 in 1941. In 1942 there was a decrease to $7,900,000, which included $200,000 of refundable taxes. In 1943 there was a further drop to $6,300,000, which included $600,000 in refundable taxes. In 1944 there was a recovery to $8,800,000, of which $1,000,000 represented refundable taxes.

The study also shows the earnings of 12 companies in the paper products field. These have shown relatively little change. In the three pre-war years the net income of these 12 companies totalled approximately $1,250,000. In 1940 it held around the same level, but in each of the years since then the net income has been $1,500,000. In the last two years, however, this figure included refundable taxes of $400,000, so that the retainable net was only $1,100,000.

Abitibi Reorganization Plan Ready

TORONTO, Ont., June 23—Agreement on the final form of the Abitibi Power and Paper Company, Ltd., reorganization plan has been achieved at recent meetings between the Hughes committee, appointed months ago by the Ontario government, and the various groups representing the different classes of security holders. As soon as the plan can be printed, application will be made to the court to set dates for meetings of security holders. It is understood that as soon as the dates have been set the printed plan and notices of these meetings will be mailed to all interested parties. It is generally expected that all the groups will approve the plan, thus finally settling the long-drawn-out proceedings for the reorganization of the great company and getting it out of the hands of the receiver and started on a new career.

Paper Shipments Rose in April

WASHINGTON, June 25, 1945—In April the index value of paper manufacturers' shipments was 187 compared with 184 in March, and 172 in April of last year according to the Industry Survey of the Department of Commerce taking an average month of 1939 at 100. The value of paper manufacturers' inventories in April was 135.7 compared to 135.1 in March and 136.1 in March of last year also taking an average month of 1939 at 100.

Pulpwood Group in Forest Council

In a recent news record of interest that has been aroused by the forestry program of the Forest Industries Council, a list of cooperating associations in the program failed to mention correctly the participation of the American Pulpwood Association. This group, together with the National Lumber Manufacturers Association and the American Paper and Pulp Association, is an active sponsor of the program that shall promote more efficient management of woodlands.

Hedstrom Joins Nord International

Harold Hedstrom has resigned from Berg, Hedstrom and Company, Inc. as vice-president and treasurer and has been appointed executive vice-president and general manager of Nord International Corporation, exporters and importers, at 485 Fifth Avenue, New York 17.

Champion Earns $2.04

Champion Paper and Fibre Company reports for the year ended April 29 net profit of $1,803,864 or $2.04 a share, compared to $1,970,426 or $2.57 for the preceding year.

Sorg Co. Nets $3.05

The Sorg Paper Company for 1944 reports a net income of $135,956 or $3.05 a common share, against $294,206 earned in 1943; net sales, $8,458,188 against $8,422,430.

Obituary

Lieutenant E. Viggo Ullmann

Lieutenant E. Viggo Ullmann, Royal Norwegian Air Force, died Friday, June 15th in the Lenox Hill Hospital of a brain tumor. He was born on September 26, 1907 in Vardo, Norway, and graduated in mechanical engineering from the Norwegian Technical Institute at Trondheim in 1932. From 1931 to 1934 he was assistant superintendent of the Moelven Pulp Mill in Moelv, Norway, and from 1934 to 1937 he was chief mechanical engineer for the Krogstad Pulp Mills, Krogstad, Norway. From 1937-1940 he was manager of the pulp and paper division of Gadelius Co. Ltd., Tokyo, Japan. From 1941 to 1944 he was a Lieutenant with the Royal Norwegian Air Force, Toronto, Ont., and acting consulting engineer for Paper Machinery Limited, Montreal, Que. Since January 1, 1944, he was a member of the Subcommittee on Pulp and Paper of the Norwegian Industrial Committee, 80 Broad Street, New York, N. Y.

He was a member of the Technical Association of the Pulp and Paper Industry, the Norwegian Technical Association and the Norwegian Society of Engineers. His father, an officer in the Norwegian Army, was recently liberated from a German prison camp and died in Norway a day before Lieutenant Ullmann. Lieutenant Ullmann is survived by his mother, wife and two children.

John H. Woolsey

A host of friends in the paper trade were shocked at the news of the tragic death on June 15 of John H. Woolsey, a member of the board of directors and sales staff of Walker-Goulard-Plehn Company, Inc., New York. He died from a fractured skull incurred on June 11 when a ladder he was using to hang screens at his home gave way. He was 55 years of age.

Mr. Woolsey was well known in the paper trade, starting his career with the Maurice O'Meara Company in 1920 and continuing on with the company when it was succeeded by the Walker-Goulard-Plehn Company. He was a veteran of World War I, a member of The Paper Club of New York, New York Club of Printing House Craftsmen, New York Paper Trade Golf Association, captain of the Walker-Goulard-Plehn bowling team and Past Master and Past High Priest of the Masonic Order.

Funeral services were held June 17 at the Community Church, Great Neck, N. Y. It was attended by many friends and fellow associates. Interment was at Port Washington.

Mr. Woolsey is survived by his widow Mrs. Dorothy Woolsey, a daughter, Carol Woolsey, his father and two brothers, Charles and Raymond.

Harry H. Kimball

Harry Hale Kimball, 59, paper broker, died June 23 at his residence, 126 Propect street, Wakefield, Mass. His wife, Mrs. Ethel Kimball, and two daughters, Mrs. Lewis H. Millett and Mrs. Mary E. Brennan, both of Wakefield, are living.

Rosin Shortage Expected to Last

WASHINGTON, D. C., June 20, 1945—Rosin supplies used for sizing are expected to be inadequate until April 1946, according to the War Production Board, since major portions of th esupply of rosins are channeled into synthetic rubber production. Optimistic forecasts indicate that the new season for gum rosin, opening in April 1946, may find labor more plentiful with a consequent increase in rosin production, committee members were told.

Goodrich Features Belt Vulcanizers

Splicing and repair of rubber belting by portable electric vulcanizers has sharply increased in importance during the present period of intense industrial activity when stoppage of production for even a short time has meant so much. Long a leader in this field, The B. F. Goodrich Company, Akron, Ohio, has just published a new catalog section on portable electric vulcanizers, which is now available upon request.

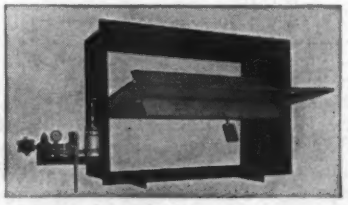
Describing the special construction features of each of the portable belt vulcanizers which is in its line, the catalog section gives service conditions under which each type operates in detail and contains a table giving complete dimensions on each vulcanizer, number and dimensions of platens, widest belt which can be spliced in it, and wattage consumed.

M. & O. Service Flag Counts Reemployed

A new type of service flag which symbolizes the re-employment of employes of Minnesota and Ontario Paper Company returning from war service, has been unfurled at the paper company's general offices in Minneapolis. The banner is a service flag with a third emblem in its white field. Below the gold star and the number 23, representing those M & O employes who died in action, and the blue star and number 862, those who entered service from the employ of the company, is a reproduction of the eagle button worn by men and women now honorably discharged. Under the gold emblem, ringed with blue, is the number 76, representing the discharged servicemen who already have found employment or re-employment at M & O.

Stackmaster Designed to Control Flue

A new double damper smoke control, now being manufactured by Campbell Engineering Co., Appleton, Wis., and marketed under the trade mark "Stackmaster" is made in sizes to accommodate the various smoke stacks where it is applied, being designed after an engineering survey of the stack and boiler performance. Its function accomplishes the purpose of adjusting the smoke stack to daily weather conditions, in order to eliminate excess smoke, reduce excess stack temperatures, maintain uniform volume of draft and stop combustion fuel losses.



Made of the highest grade materials and efficient motors and controls, the "Stackmaster" is said by its manufacturer to revolutionize boiler performance so that the savings in fuel cost may range from 5 to 50% as the efficiency of the boiler is increased. The "Stackmaster" is installed with either electric, hydraulic, or pneumatic control system so that it may be designed to meet practically all conditions where there are excess smoke and combustion losses. It is shown in an off-period position.

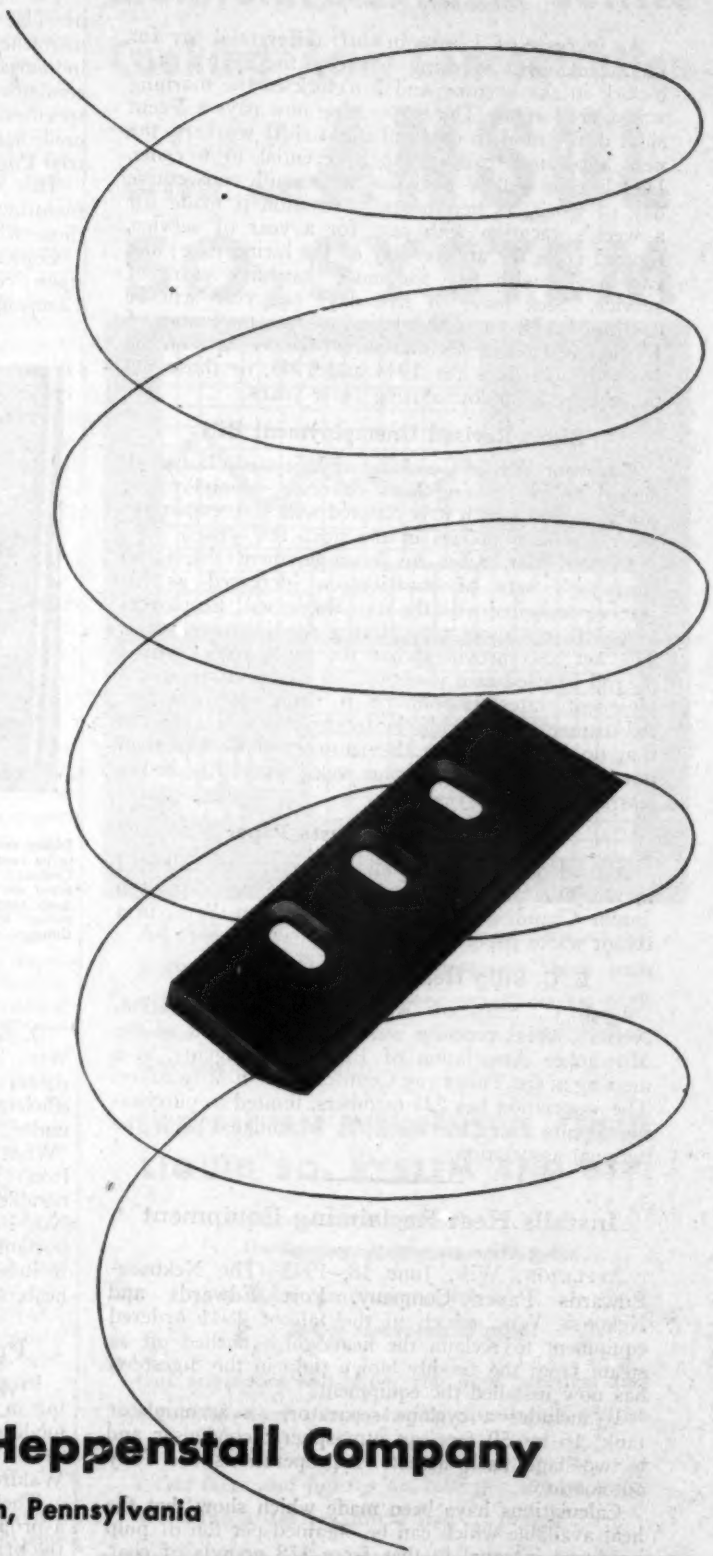
we make them

as good as

we know how

and we do know how

It will certainly pay you to study the Heppenstall E. I. S. Chipper Knife guarantee. Here it is:—We *guarantee* these knives to show a unit cost below any other chipper knives on the market—with the following points taken into consideration—(1) *Operating hours between grinds.* (2) *Grinds per knife.* (3) *Chipper "down time".* (4) *Sawdust loss.* (5) *Oversized chips.* . . . Pretty complete and *conclusive* isn't it? . . . Well, we have been safely making that guarantee for a good many years. What more can we say?



Heppenstall Company

Pittsburgh, Pennsylvania

TO ERECT NEW BLEACH PLANT

(Continued from page 7)

An increase of 3 cents in shift differential pay for union members working between the hours of 7 o'clock in the evening and 7 o'clock in the morning was agreed upon. The corporation now pays a 3-cent shift differential to day and night shift workers, the new agreement raising the differential to 6 cents. Double time will be paid for the seventh consecutive day of work, as heretofore. Provision is made for a week's vacation with pay, for a year of service, figured from the anniversary of the hiring date; and two weeks with pay for more than five years of service. Sick leave of five days per year will be continued with an accumulation up to a maximum of 15 days in 1946 or accumulation of leave days on the basis of five days for 1944 and 1945, or those not taken by the employe during those years.

Signs Revised Unemployment Bill

Governor Walter Goodland of Wisconsin last week signed a bill revising laws covering unemployment compensation which it is claimed will save employers several million dollars in the next few years.

In the past, after an unemployment drain, an employer's rate of contribution increased as his reserve deposited with the state decreased. Employers now will pay lower rates during readjustment years. The act also provides that the most recent year's payroll be used as a yardstick for determining unemployment rates instead of a three-year average. Adjustments are made in intermediate brackets so that no benefit rate in the future will be less than one-half the worker's average wekly wage if he makes less than $2,000 a year.

Juniors Collect Waste Paper

A total of 125,685 pounds of paper was collected in the June paper drive sponsored by the Appleton Junior Chamber of Commerce, Appleton, Wis., in a recent waste paper tag day.

L. C. Stilp Heads Purchasing Agents

Lyall C. Stilp of Kimberly-Clark Corporation, Neenah, Wis., recently was elected president of the Milwaukee Association of Purchasing Agents, at a meeting at the Tuckaway Country Club in Milwaukee. The association has 225 members, limited to purchasing agents from the state. It is affiliated with the national association.

Installs Heat Reclaiming Equipment

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., June 18, 1945—The Nekoosa-Edwards Paper Company, Port Edwards and Nekoosa, Wis., which in the fall of 1941 ordered equipment to reclaim the heat which flashed off as steam from the freshly blown pulp in the digesters, has now installed the equipment.

It includes a cyclone separator, an accumulator tank, 16 by 50 feet, an atmospheric condenser and a two-stage flash heater. All operations are fully automatic.

Calculations have been made which show that the heat available which can be obtained per ton of pulp produced is equal to that from 178 pounds of coal. Therefore, the heat from this source each day in a mill manufacturing 150 tons of pulp per day is equivalent to that in 13 tons of coal.

Electric Propelled Trucks

The Automatic Transportation Company, Division of The Yale & Towne Manufacturing Company, manufacturer, for over 38 years, of electric propelled industrial trucks, has just published a new four-page condensed catalog folder. It consists of detailed specifications covering the Transporter, battery powered, hand lift truck, and Automatic Electric Industrial Power lift trucks.

This condensed catalog folder will be useful to manufacturers and in all lines of business, particularly those who are planning post-war operations.

Copies are available and will be sent without charge upon request addressed to Automatic Transport Company, 101 W. 87 street, Chicago 20, Ill.

TRANSPORTER SAVES TIME AND LABOR

Direct savings of $4.80 daily in labor costs, and indirect benefits not to be counted so easily are attributed by the Michigan Lithographing Company, Grand Rapids, to its Transporter, which moves skid loads of paper averaging 3,250 pounds to and from shipping platforms, up and down ramps, and around sharp right-angle turns. Use of the Transporter, manufactured by the Automatic Transportation Company, Chicago, eliminates need to call extra men from their regular jobs when the trucker meets these conditions.

Corrosion in Unit Heaters

D. J. Murray Manufacturing Company, Wausau, Wis., has issued a 12-page booklet describing corrosion and its influence on unit heaters and their efficient operation. It contains technical information under various headings as "What Is Corrosion," "What Prevents Corrosion," "One Metal (Cast Iron) Resists Corrosion," "What Metals Are Vulnerable to Corrosion," "Where Certain Metals Should Not Be Used," "Selection of Proper Unit as Important as Machinery for Production Line." It also includes illustrations of cast iron "fin" type unit heaters and installation views.

Progress in Laminating Equipment

Progress in the operations of laminating culminating in the notable results being achieved today with modern materials, methods and machines, is described in Catalogue No. 118, just issued by the John Waldron Corporation, New Brunswick, N. J.

The publication presents the required properties for a properly laminated sheet and a brief description of the principles of operation and the outstanding design and construction features of the Waldron laminators. Illustrations of many of the laminating machines in the large Waldron line are included.

E. W. Tinker Comments on Tariff

The Senate's action on June 20 in passing the Reciprocal Trade Agreements Act thereby conferring authority upon the President to reduce present tariffs by 50%, gives him the power to wipe out segments of the American paper and pulp industry, and turn many prosperous American communities into sleepy villages or deserted crossroads, E. W. Tinker, Executive Secretary of the American Paper and Pulp Association declared today.

In supporting this statement, Mr. Tinker said:

"Paper is made in the same way in all papermaking countries of the world. The trees are cut down and bucked into the proper lengths with the same tools and they are brought to the mills by the same methods of transportation. The chippers, grinders, digesters, beaters, and paper machines are identical the world over. Only standards of living and wages vary in the pulp and paper industry. In the United States the rate of pay for the same kind of work is approximately three times that of Norway, Sweden, Finland or France. The ocean freight rate from these countries to American ports is about the same or a little less than the railroad freight rate from Lake States mills to the Eastern seaboard.

"Consequently, every other papermaking country is a lower cost producer than the United States, and can, therefore, sell its paper here at prices under those which the United States industry can afford. Heretofore, this difference in price has been taken up, in whole or in part, by a tariff which permitted American paper makers to meet this foreign competition; but the Reciprocal Trade Agreements Act, recently passed by Congress, permits the President—which means the State Department—to cut the present tarifl by 50%. If this cut is made, American paper makers will face even more severe foreign competition, and the amount of paper imported into this country will greatly increase.

"On the average, every ton of paper imported deprives one American worker of three days' employment; but in the writing paper mills, one ton of paper represents a full week of work. Any tariff reduction which increases imports thus results in an immediate proportionate idleness of American paper mill employees.

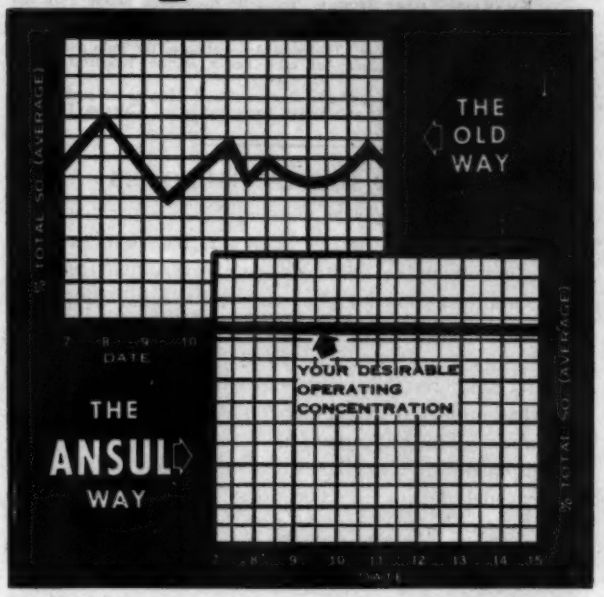
"The United States experimented with reciprocity in 1911, and the United States newsprint industry in particular, and the entire industry in consequence, were the victims of that experiment. When the United States made newsprint duty free as its part of a reciprocal trade agreement with Canada—an agreement which Canada failed to ratify—the newsprint industry moved to Canada. Since that time American mills have been compelled to abandon that field, while it has had tremendous growth outside of the United States, principally in Canada, England and the Scandinavian countries. Because of Canadian recpirocity, paper mills shut down, prosperous mill towns degenerated to crossroads and farm villages.

"It has happened—it can happen again."

Michigan Superintendents to Golf

A highly enjoyable day of relaxation is planned by the Michigan Division of the American Pulp and Paper Mill Superintendents Association for July 26. Golf, with the first foursome scheduled to tee off at one o'clock, and dinner at seven, promises a full day's program for those who attend at Maple Hills Country Club, Kalamazoo.

Maintain Maximum Sulfite Cooking Acid Concentration with an ANSUL SO_2 SYSTEM



An Ansul SO_2 system permits instantaneous adjustment of SO_2 concentration to meet such emergencies as wet or green wood cooks, high water temperatures, etc., which adversely affect cooking acid strength.

INSTALL AN INEXPENSIVE ANSUL LIQUID SO_2 SYSTEM AND GET:

- **Shorter cooking time . . . Improved digester schedules.**
- **More complete pulping . . . Better screening of pulp.**

Our engineers will show you how practical and inexpensive this money-saving installation will be in your mill.

Get facts and figures on cost per ton of pulp. Write the Ansul Technical Staff . . . today!

ANSUL CHEMICAL COMPANY
MARINETTE, WISCONSIN
EASTERN OFFICE 60 E. 42ND ST., NEW YORK CITY

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger, Editor

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Empire State Section. Technical Association of the Pulp and Paper Industry—Second Thursday of each month at the Woodruff Hotel, Watertown, N. Y.

Chicago Professional Paper Group. Third Monday of each month except July and August at Chicago Bar Association, Chicago, Ill.

BOOK SUPPLY IMPROVES

Supply of groundwood and book papers appears more favorable for the third quarter. Unless some reduction in the heavy all-over government requirements for newsprint paper can be made, little improvement in the current tight supply situation seems likely at this date. From the latest reports of the Department of Commerce the wood pulp situation may be somewhat improved in groundwood printing and in book papers. This expectancy is based largely upon larger shipments of Canadian wood pulp after July 1. The seasonal decline in collections of waste paper is a deterrent factor in the future paper and paperboard supply for civilian consumption.

Newsprint production by United States mills in April aggregated 60,000 tons, compared with 65,000 tons in March, 1945, with 57,000 tons in April, 1944, and 68,000 tons in April, 1943. Newsprint imports in April totaled 196,000 tons, compared with 215,000 tons in March, 1945, with 200,000 tons in April, 1944, and with 202,000 tons in April, 1943. Newsprint exports in April totaled 5,000 tons, compared with 6,000 tons in March, 1945; with 2,000 tons in April, 1944, and with 4,000 tons in April, 1943. Publishers' stocks totaled 292,000 tons in April, compared with 304,000 tons in March 1945, with 316,000 tons in April, 1944 and with 419,000 tons in April, 1945. Mill stocks were reported at 6,000 tons in April, compared with 5,000 tons in March, 1945; with 8,000 tons in April, 1944, and with 11,000 tons in April, 1943. The apparent total consumption of newsprint in April was 280,000 tons, compared with the same figure in March, 1945, with 277,000 tons in April, 1944, and with 324,000 tons in April, 1943. The percentage of change in 1945 over 1944 indicates that United States production increased 5.1%; imports, 3.1% and exports 14.7%. The apparent total consumption decreased 1.8% thus far in 1945 from 1944. Total North American production of newsprint in the first four months of 1945 was divided into the following tonnages: U. S., 243,000 tons; Canada, 1,014,000 tons; and Newfoundland, 107,000 tons; in 1944, U. S., 231,000 tons; Canada, 971,000 tons; and Newfoundland, 81,000 tons; in 1943, U. S., 276,000 tons; Canada, 932,000 tons, and Newfoundland, 56,000 tons.

From the production data now available the indicated consumption of newsprint by United States publishers in the third quarter, The Department reports, will continue at about the same level as during the first half of 1945. In order to maintain this rate of consumption it will again be necessary to use inventories since the increased amount promised by Canada is inadequate to offset the excess of orders at the mills. On May 31, 1945, amendment to Limitation Order L-240, reduced inventory ceilings from 40 days in the eastern and northern areas, and 65 days in the southern and Pacific areas, to 30 days and 50 days, respectively. This new schedule will go into effect June 30, 1945, and will permit U. S. publishers to maintain their present consumption quotas in full, but deliveries will be reduced to bring inventories within the new ceilings.

Although the statstical position of the newsprint supply indicates a continuance of the current tight situation, Canadian authorities have announced that beginning July 1, 1945, Canada will supply the United States with 215,000 tons of newsprint monthly. This is an increase of 15,000 tons monthly over the previous rate. It is reported, however, that this increase is insufficient to offset the present excess of 50,000 tons of deferred orders which have accumulated at North American mills since the first of this year. These deferred orders, the Department report points out, have accumulated because orders from consumers and government agencies in the United States have exceeded the available supply. Newsprint orders on Canadian mills from the Army, the Foreign Economic Administration, and other agencies are now running at about 20,000 tons monthly. So long as this demand continues on North American mills there is little prospect of any material change in the present tight situation.

Paper stocks of groundwood printing and book papers are reported low at the mills. Production of groundwood papers totaled 50,000 tons in April, compared with 54,000 tons in March, 1945, and with 50,000 tons in April, 1944. Book paper production in April totaled 117,000 tons, compared with 125,000 tons in March, 1945, and with 117,000 tons in April, 1944. Output of groundwood papers increased 4.0% in 1945 above 1945, and book paper production decreased 3.6% in the same period.

Additional tonnage up to 15% of the 1942 consumption, for the printing of school textbookks, encyclopedia, and other intermittant publications has been somewhat liberalized. Extra paper may be granted on appeal to permit the continued issuance of such publications, if they would consume an excessive proportion of the publisher's consumption quota.

Since the issuance of Limitation Order L-244 was amended on February 5, 1945, the Department reports the temporary discontinuance of 37 comic magazines and five detective periodicals. In addition, 21 publishing firms producing 40 magazines have been notified that they have no consumption quotas. More than five million copies of comic and detective magazines were "frozen" before printing was completed or before they reached the newsstands. These copies are ultimately destined for sale as waste paper, the Department states. Paper used in their publication was obtained from inflated paper quotas, nonexistent quotas, or illegal use or resale of paper quotas. Publication of many illicit magazines, which would have consumed thousands of tons of critically needed paper was halted before printing.

Green Twill at 3½ Cent Ceiling

WASHINGTON, D. C., June 14, 1945—Cuttings of new green herringbone twill materials will have a specific ceiling price of 3½ cents a pound on all sales, the Office of Price Administration announced today. This action, effective June 14, 1945, is taken to prevent the sale of such cuttings at the 4¼ cent ceiling established for cuttings of bleachable khaki cotton materials.

Although green herringbone twill cuttings have customarily sold as unbleachable khaki cotton cuttings for which the ceiling is 3½ cents a pound, some dealers are now selling them at the 4¼ cent ceiling, claiming they are bleachable materials.

These cuttings are sold primarily by the armed forces in New York, Philadelphia and Baltimore. They are bought by dealers or brokers who, in turn, sell them to paper, fiber and plastic factories.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1945		Corresponding Weeks—1944	
May 12	85.4	May 13	87.6
May 19	92.5	May 20	90.7
May 26	92.0	May 27	90.0
June 2	87.9	June 3	86.1
June 9	92.8	June 10	90.7
June 16	*91.5*	June 17	91.5

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	88.7	88.5	88.1	87.6	88.7	89.8	80.3	90.6	88.2	92.5	90.6	82.4	88.1
1945	86.7	89.4	90.2	88.1	*89.8*								

COMPARATIVE YEARLY SUMMARIES

	1938	1939	1940	1941	1942	1943	1944	1945
Year to Date	67.4	79.6	86.8	93.1	99.7	88.8	88.6	*88.9*
Year Average	71.5	83.4	85.6	97.4	90.4	87.8	88.1	

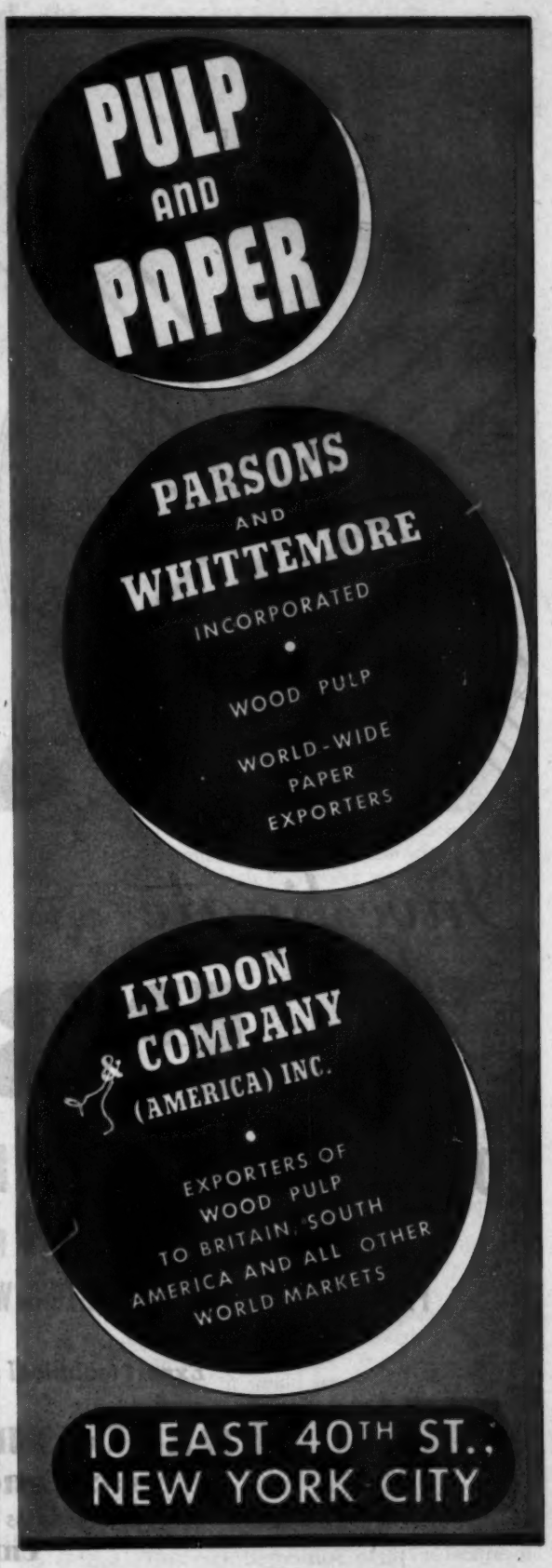
*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

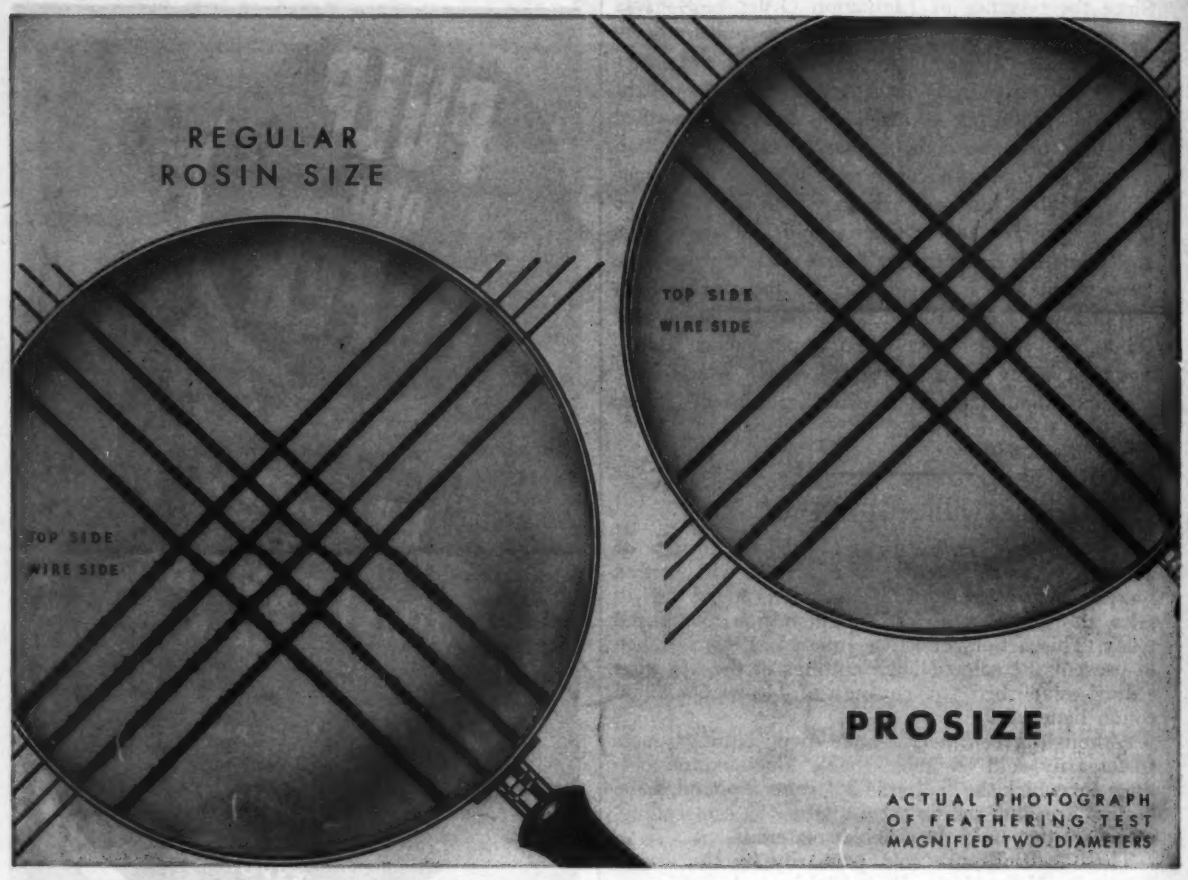
PAPERBOARD OPERATING RATIOS†

Current Weeks—1945		Corresponding Weeks—1944	
May 12	94	May 13	95
May 19	97	May 20	97
May 26	97	May 27	96
June 2	93	June 3	93
June 9	97	June 10	96
June 16	*96*	June 17	95

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	90	96	95	96	96	96	85	96	92	95	95	85	93
1945	91	95	97	97	*96*								

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.





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Packaging for the Post-War Market*

By A. F. Wendler[1]

Abstract

Because of the shortages imposed by war conditions it was necessary to develop packages of a functional nature from less critical materials. It is expected that there will be a tendency toward a reversion to previous packaging procedures and that advertising value will be combined with the functional requirements. The choice of materials will be dictated by cost as well as properties desired. New applications will require continued development of materials, equipment, and packing methods.

Both the paper industry and the cellophane industry have actively promoted and will actively promote the art of packaging merchandise and in a great many cases both materials are used in the final package. Nevertheless, until about five years ago there existed a somewhat peculiar condition in these industries which are closely allied in the packaging field. Each industry seemed to do all possible within its own sphere of activities to avoid contact with any other industry operating, or attempting to operate, in the same field. For example, the metal people worked by themselves, the glass, rubber, paper, and transparent film producers did likewise. Within the transparent film group itself little effort was directed toward attempting to combine various types of sheetings.

With the advent of the war, metal and rubber immediately became critical and other materials were called upon to take their places in many instances where the requirements were much more drastic than the previous demands on these products.

In addition, the trend was to the "technical." Previous specifications had, in some instances required —"shall be waterproof," "shall be moistureproof," etc., but no specific values or limits were established.

To the best of the author's knowledge, Army-Navy Specification AN-O-P-406 was about the first to establish a fixed value for moisture-vapor transmission. This soon led to other well-known specifications as AXS-840 Rev. 1, 100-15, AN-C-67, AN-P-54, AXS-1322, etc.

To meet these requirements, the paper industry accomplished a very progressive deed by ignoring what appeared to be tradition and attempted to combine their products with almost anything and everything in an endeavor to develop packaging materials to meet the requirements.

The results of this work were very interesting inasmuch as the finished product: (1) Amply fulfilled the more exacting technical requirements; (2) Broke down previous thinking that dissimilar materials could not be combined; (3) Bore little, if any, resemblance to the original materials used; (4) Combined the necessary requirements from one material with those of another, even to the point of complete elimination of certain characteristics which had previously been considered one, if not the most important attribute, e.g., the elimination of transparency in cellophane and similar films; and (5) Lacked the glamour and beauty of the items of the pre-war packaging era.

These newly developed materials were frequently referred to as industrial laminations, functional wraps, ordnance wraps, etc.

During the course of this development, many difficulties were encountered and at times, some of the converters were inclined to become discouraged if they permitted themselves to concentrate their thinking on the dissimilarity of certain characteristics of the products with which they were working.

The problems invariably resolved themselves into a development of the "know-how," rather than a function of the product. The conditions during this period are much the same as those during the early developmental stages of printing of transparent films —namely those of 15 to 20 years ago. Certainly the current printed transparent films show the results of the improved "know-how."

Fortunately, from the standpoint of speed of development, the design, make-up, and use of the materials was aimed at having the product being packaged reach the ultimate consumer in an ideal condition for use, and costs were secondary.

Currently, from the reports available, these newly developed materials are performing their prescribed tasks very satisfactorily.

Post-War Packaging

To attempt to look forward into the post-war applications is not an easy task. It is possible, however, to approach the problem through a sort of step-by-step procedure.

In the first place, it would seem reasonably logical to assume that many products, with availability post-war, will revert to their previous packaging procedures, or at least, have strong tendencies in that direction. This is based on the theory that practices just pre-war were established on rather well justified bases.

Obviously there will be a tendency for considering a change. This may be because of: (1) Desire of

* Presented at the meeting of the New England Section of the Technical Association of the Pulp and Paper Industry held in Boston, Mass., Dec. 15, 1944.

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variety or for change sake alone, (2) improvements in previous materials, (3) cost factors, (4) technical information gained during the war era, and (5) availability of new materials of radically different or improved characteristics.

In this new post-war era, certainly the glamour and beauty of design, coupled with the advertising and promotion of the pre-war products, will not be forgotten. The more recent functional requirements will also play their part and as a result the same beauty and eye-appeal seen previously will be obtained with the added characteristics of a technically sound package.

From another angle, the days of bulk packaging and the efforts made toward the packaging of merchandise in convenient units of sale can be remembered. When the war brought on functional wrapping, a type of packaging took place which really could be classified as bulk — items as tanks, trucks, airplanes, etc., where bags up to 30 or 40 feet long were employed.

For the types of material that will be used, almost anything can be expected to happen. Probably Aladdin's lamp wouldn't be able to out-shine the efforts of the skilled converters. If what they have done during the war period with the materials that were available and what they might do with some of the newer things heard about are considered, it would appear that they might give the government lessons in setting up specifications.

Besides improvements to the materials existing on the market pre-war, there are all sorts of new resins, plastics, adhesives and laminants in addition to transparent films of nylons, vinyls, vinyl copolymers, rubber derivatives, acetates, polythenes, etc.

With the possibility that these may also, in some cases, become coatings on some of both the new and existing materials, the author shall leave to imagination the permutations and combinations of possible packaging materials.

With these new materials, it is well to remember that many are still in the experimental or partially developed stage. Their availability as standard commercial films is still subject to unknown time elements.

In the choice of these newer materials as well as in the case of current materials, there will be a wide range of products available in a wide range of costs and characteristics. The basic fact remains that they cannot be logically chosen on the basis of one item alone, e.g., protection necessary to a product depends upon the product and its turnover period. Protection beyond actual needs at higher costs is hardly justified. The final choice rests upon the correlation of product, turnover, and cost.

There remains then the question as to where the materials will be used. Here again, past usage will consume a large percentage. The new uses, however, will be the most fascinating to those both technically and production minded.

New Applications for Packaging Materials

These new uses are difficult to forecast, but there are a few that look promising.

In the frozen food locker industry in 1938, there were somewhat less than 1,300 plants. By 1942 there were over 4,000, and at present the total is probably well over 5,000. This new field is certainly far from perfection or stability.

In the past, the emphasis in the frozen food field has been on "fresh frozen." The field has covered meats, poultry, vegetables, and fruits. There exists a possibility for pre-cooked frozen foods which require merely heating to the proper temperature for serving. This would open a field of prepared mixed dishes of the finest flavorings, and combinations not otherwise available.

Recent listings have shown over fifty such items well on their complete developmental path, or in commercial production.

Ordnance requirements have brought to the foreground the packaging of metal and similar parts. With the world having become a much smaller place as a result of increased speeds and air travel, and the undoubted increase in world markets, the current export packaging field should continue to be a fertile field for packaging materials.

In this connection, there has been an almost miraculous growth in desiccant packaging for ordnance equipment. To date, this has not spread to the food packaging field, but it is felt that it may readily do so when it is realized that this method offers the same advantages for extremely low moisture content products against moisture pick-up that it offers to metal in the form of corrosion prevention.

A further item on which there is considerable discussion is that of post-war air travel and air freight. In the case of the latter, it is quite illogical that packaging materials be any heavier or bulkier than necessary. This would indicate a flexible package of some type. A bit further study causes one to further qualify this specification by stipulating a vacuum flexible package for many applications.

If one desires moisture vaporproofness, leak proofness or sift proofness, it becomes necessary to seal the package completely. In air travel, with increase in elevation, pressures on the outside of the package are reduced and because of the pressure differential in the sealed package, there will be a definite tendency to blow up and perhaps fracture the wrapper. To offset this tendency requires packaging under partial vacuum at least equivalent to the reduction in pressure caused by the increased altitudes.

A parallel to the above, but taking this a step farther, is the application of full vacuum in the flexible packaging field. Associated with this step is the use of inert gas as nitrogen and carbon dioxide in the flexible packaging field.

This will require improved materials, new equipment, and new methods. Further, it will require study of gas transmission through various materials and the establishment of standardized testing procedures. This can readily be appreciated by those who in the past have been associated with the attempts of standardization of moisture vapor transmission rates. Active research work along these lines is already under way in a limited number of locations.

These are but a few of the possibilities and human ingenuity will add many more, both from the standpoints of materials and applications.

New Chemical Formulary

A complete collection of chemical formulas is contained in Volume 7 of "The Chemical Formulary," just published by the Chemical Publishing Company, 234 King street, Brooklyn, N. Y.

In chapter 14 on the paper industry, a variety of formulas are included, such as alumina sol, anti-mist paper for glass, non - hygroscopic adhesive - coated paper, paper pulp oilproofing, grease-resistant paper, and the latest formula for deinking newspapers.

Some Applications of Pulp and Paper in the Plastics Industry*

By Donald T. Jackson[1]

Abstract

The application of pulp and paper in plastics can be divided into three main divisions: the fiber is used as a raw material and is converted by chemical action into a thermoplastic material, e.g., cellulose acetate; the fiber is mixed with or used in the form of paper as a filler; or the paper is coated or impregnated to confer special properties required for packaging, etc.

The manufacture of laminated products is discussed covering such subjects as the paper used, the treating and conversion processes, and the properties and uses of the laminate.

Only within the past two years has the pulp and paper industry discovered the importance of the plastics industry as a potential volume outlet for paper products. This is rather peculiar for the plastics industry early discovered the importance of pulp fiiber and paper in improving the properties and extending the applications of their product. One of the earliest patents issued to the late Dr. Baekeland, U. S. patent 1,091,406 (March 5, 1912), refers to the use of "a composite cardboard consisting of superposed layers of paper or the like combined with intermediate layers of an insoluble, infusible condensation product of phenols and formaldehyde." Many other patents covering various methods of application of synthetic resins to paper and the production of useful items therefrom were issued in the early days of the development of the plastics industry.

It is true that several paper mills have been engaged in the manufacture of specialty pulps and papers for the plastics industry and that a few mills have installed their own plastics divisions wherein the fiber-resin combinations are made and the finished articles fabricated. Likewise, some resins or plastics manufacturers have their own paper mills in operation. However, the discovery of the plastics industry by the whole pulp and paper industry was an event of the past one or two years.

Initial impetus for this sudden recognition of the potential field which plastics offered for the use of pulp and paper was given by the war-created demand for substitute materials for critical metals. The startling suddenness with which resin-fiber combinations began to meet the heretofor unheard-of requirements for war weapons, production equipment, and essential civilian demands greatly accelerated this recognition. Finally, the patriotic desire of the paper industry to serve the government in the most direct and immediate way possible has spread the interest in plastics throughout the industry.

Statistical Summary

Before entering into a detailed examination of some specific applications of pulp and paper in the plastics industry and possibly venturing some predictions as to the future, let us pause for a moment to examine the latter industry as a whole. The Cinderella-like rise of plastics from relative industrial obscurity to a position in the spotlight of public acclaim has probably been caused almost equally as much by what plastics are expected to do in the future as by what they are now doing or have done in the past. Feature articles in newspapers and magazines, optimistic industrial advertising, picturesque war applications, and the natural tendency of the American public to exaggerate anything new has served to place the plastics industry in a position where a proper perspective is difficult to obtain. The public has been led, largely by its own wishful thinking, to believe that plastic automobiles, planes, boats, houses, bathtubs, and furniture await only V-day to make their appearance on the industrial scene. Many in the paper industry have, likewise, failed to obtain, or to keep, the plastics industry in proper perspective to paper. It can in no way lessen the appreciation of the marvelous work which plastics have done, and are doing, in the war, and which they will undoubtedly continue to do when peace comes if this comparison is made.

Reliable statistics are very difficult to assemble, especially for the past few years when wartime limitations have prevented a complete report on many phases of industry, but certain trends can be indicated and approximations made.

The following table taken from the report of the Bureau of Census shows a comparison between the total values of the products of several different industries for the year 1939, the last year uninfluenced by the war demands.

TABLE I.—THE POSITION OF PLASTICS IN INDUSTRY AS INDICATED BY A REPORT OF THE BUREAU OF CENSUS SHOWING TOTAL VALUES FOR THE YEAR 1939

Motor cars	$4,039,931,000
Steel works and rolling mills	2,720,020,000
Petroleum refining	2,461,127,000
Paper and paperboard mills	933,016,000
Chemicals (noncoal tar origin)	839,750,000
Wool and worsted manufacture	685,312,000
Paints, varnishes, and lacquers	434,961,000
Cane sugar	384,412,000
Rayon and allied products	247,066,000
Photographic apparatus, materials, and equipment	133,899,000
Colors and pigments	83,886,000
Plastic materials (Synthetic resins and cellulose plastics)	37,881,000
Sulphuric acid	37,881,000

Thus, it can be seen that plastics are well down the list and represent less than 2% of the dollar volume of the motor car industry. The value of plastics is exceeded by that of such things as photographic products and is only about 1/5 the dollar volume of the cane sugar produced.

However, the plastics industry now is one of the fastest growing of all, the war having greatly accelerated the rapid climb which was already under way before 1939. Figures 1 and 2 show the very rapid increase in the production and value of synthetic resins and cellulose plastics since 1933. The break down into resins of coal tar and noncoal tar origin is rather arbitrary and refers more to the nature of

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* Presented at a meeting of the Delaware Valley Section of the Technical Association of the Pulp and Paper Industry, in Philadelphia, Pa., March 3, 1943.

[1] Member TAPPI; Chairman, TAPPI Pulp Purification Committee; Research Chemist, Hammermill Paper Co., Erie, Pa.

the resin than to its source, e.g., phenolic or cresylic resins from petroleum fractions are classed as of coal tar origin.

The contrasting figures for wood pulp and paper production, expressed in millions of tons instead of millions of pounds, are shown in Fig. 3.

The 1942 and 1943 production figures for paper are further broken down by paper classes in Table II.

TABLE II.—U. S. PRODUCTION OF VARIOUS GRADES OF PAPER FOR 1942 AND 1943
(Tons of 2000 pounds)

Type of Paper	1942	1943
Cultural Papers		
Book, newsprint, writing, etc.	4,457,000	4,031,000
Industrial Papers		
Special industrial papers	188,000	197,000
Sanitary papers	811,000	813,000
Tissue papers	170,000	165,000
Absorbent papers	65,000	87,000
Building papers	1,001,000	877,000
Paper board	7,969,000	8,627,000
Total all types	17,083,000	17,103,000

Source: 1942 calculated from Bureau of Census Data. 1943 estimated from Bureau of Census Data for first 10 months of 1943.

Figure 4 shows how the per capita consumption of paper in the United States has increased since the year 1800. It is sobering to notice that the per capita consumption of plastics in the United States in 1942 was not greatly different from the per capita paper consumption in 1800.

This comparison is offered, not with the idea of in any way detracting from the magnificent job the plastics industry is doing or in any way to belittle the importance of this rapidly growing industrial newcomer but rather to furnish background for an evaluation of the position which the paper industry now occupies, or may expect to occupy in the future, as a supplier of raw material in plastics manufacture.

Pulp and Paper in Plastics

The applications of pulp and paper in plastics can be divided into three main divisions: (a) Those in which the fiber serves only as the basic raw material which is converted by chemical action into the finished thermoplastic material, e.g., cellulose nitrate, acetate, the mixed esters, and the cellulose ethers

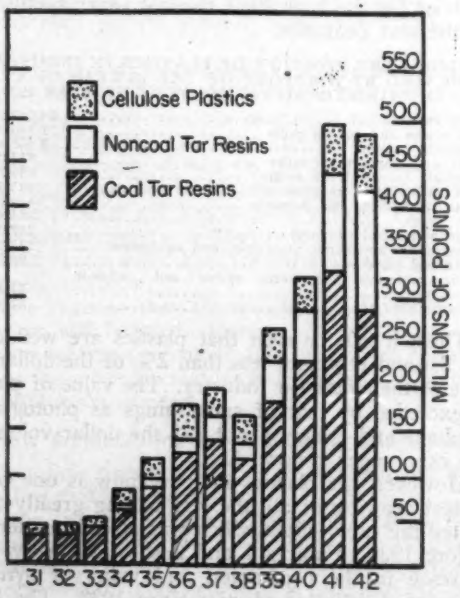

FIG. 1
Production of Synthetic Resins and Cellulosic Plastics. (Bureau of the Census) 1942 estimated.

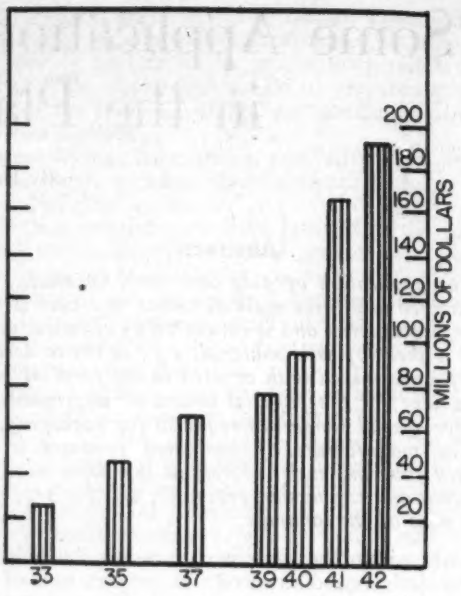

FIG. 2
Value of Synthetic Resins and Cellulosic Plastics. (1937-39 Bureau of the Census) (1940-42 U. S. Tariff Commission).

such as ethyl or methyl cellulose; (b) those in which the fiber is intimately mixed with the synthetic resin as a so-called "filler" and acts as a reinforcing and modifying agent to the finished plastics; (c) those wherein the fiber is coated or impregnated with the resin to confer special properties on the paper which is to be used for wrapping, packaging, decorative purposes, etc.

a. Cellulose Fiber as a Basic Raw Material

Only a brief mention will be made of the application of cellulose fiber as a basic raw material since, first of all, the amounts involved are relatively small, the annual consumption being only about 60,000,000 pounds; secondly, the manufacture of fiber for such applications is a highly specialized industry centered in the relatively few mills which are properly equipped for such work. Furthermore, it does not appear likely that the requirements will expand greatly or that it will ever become a problem of the paper industry as a whole.

Either relatively highly purified alpha pulp made by removing all but the more resistant cellulose from wood pulp through an alkaline treatment, or purified cotton linters (the fuzz fibers on cottonseed) are almost universally used for the production of the so-called cellulose plastics. Since the cellulose plastics are all thermoplastic, the introduction of the many other thermoplastic materials, such as the vinyls, polystyrene, etc., may result in only a limited increase, or even a possible decrease, in the use of the cellulose plastics in the future.

b. Cellulose Fiber as a Reinforcing Material in Plastics

1. Molding Compounds. — Alpha cellulose from wood pulp is used as a filler in both urea and melamine molding compounds. The molding composition consists of about equal parts by weight of filler and resin. Alpha cellulose is preferred for this use because of the improved color and greater color stability obtained in the finished product. A high degree of purity, whiteness, absorption, and uniformity is

always specified for these pulps. Maximum strength which is essential in the finished product is influenced by the strength of the alpha cellulose used. As previously mentioned, the manufacture of this type of pulp is limited to relatively few mills which have the necessary specialized equipment.

2. Laminated Plastics.—By far, the most important use of paper by the plastics industry, both from the standpoint of volume and from direct participation of the papermaker, is its use as a base for laminates. It is here that the greatest interest is being shown and the most important developments are taking place. This paper is principally concerned with this phase of paper utilization by the plastics industry.

The use of paper as a base for laminates is extremely old. There is in Dard Hunter's paper museum in Boston a small coffin which once held the body of a pet falcon of a king. This coffin which dates back many hundred years is made of several layers of heavy paper laminated together with an adhesive and molded to the proper shape. The previously mentioned early patent by Dr. Baekeland describes the manufacture of paper impregnated with a phenolic resin. The first molded fiber gear was made from laminated paper although fabric was later substituted because of better impact strength. The first phenolic laminate apparently was manufactured by Westinghouse in August 1909. Much of the early phenolic resin production was utilized in the manufacture of paper base laminates for electrical and structural uses. Industry has found many other uses for paper base laminates. Various fibers and fiber combinations, such as asbestos, cloth, canvas, other textiles, glass fiber, and glass cloth, have been used as bases for laminates.

Processing

Impregnating or Treating

The first essential in the forming of all laminates is to treat or impregnate the paper or other base with the particular resin in the proper quantities and in the proper physical and chemical state. This treatment may be carried out in any one of several ways depending on the equipment available or the material being treated but is governed largely by the nature of the resin used. The resins most generally used are the phenolics, the ureas, and the new melamine resins. Newer resins, such as the Allymers (CR 39, etc.) and Laminac are receiving attention. According to Carlson *(1)* the four general processes in common

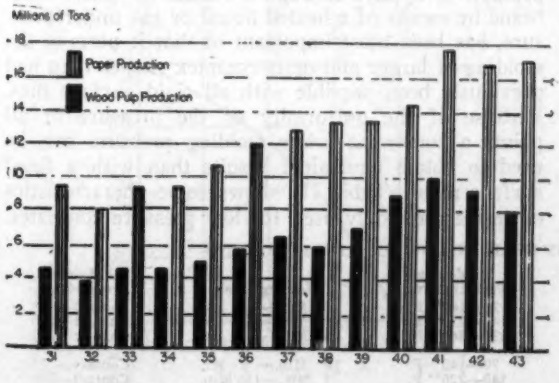

Fig. 3

U. S. Production of Wood Pulp and Paper. (Source 1931-41 United States Pulp Producers Association. 1942-43 Paper—U. S. Bureau of Census).

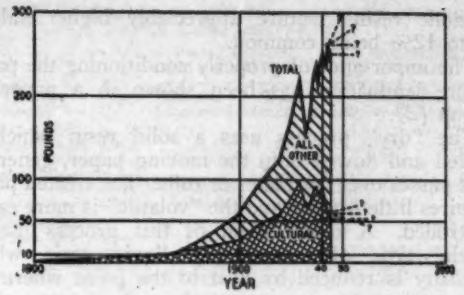

Fig. 4

Consumption of Paper in the United States. Pounds Per Capita.

use are the so-called "wet" process, "dry" process, knife coating process, and spray coating.

The "wet" process treats, by far, the greater amount of the paper used for lamination; and, as the name indicates, the paper dips into a bath of the resin dissolved in alcohol, water, or other solvent; or it may be a naturally liquid resin (Fig. 5).

Doctor blades or squeeze rolls control the amount of resin picked up. The resin treated paper then passes through a heated oven where the volatile solvent is removed and the resin advanced to the proper stage of reactivity. Careful control is necessary at this point. Recent experiments with infrared drying ovens indicate that this method will offer many advantages once it has been perfected.

Careful and frequent checks on the "volatile" — that is, the material lost when the resin treated paper is heated for a specified time at a point near the eventual resin cure temperature—are made to control the treatment. Too high "volatile" gives a so-called "wet" or "green" sheet which causes excessive resin losses and may result in blistered or "blown" laminates; too low volatile is undesirable as it may indicate a resin too far advanced to give good flow and bonding in the finished laminate. The proper amount of "volatile" will, of course, vary for different resins and for different applications; but it must, in general be somewhat higher for low pressure than for high pressure laminates. The actual amounts of volatile will generally fall between the limits of 3 to 6% for spirit soluble phenolic varnishes. Water soluble

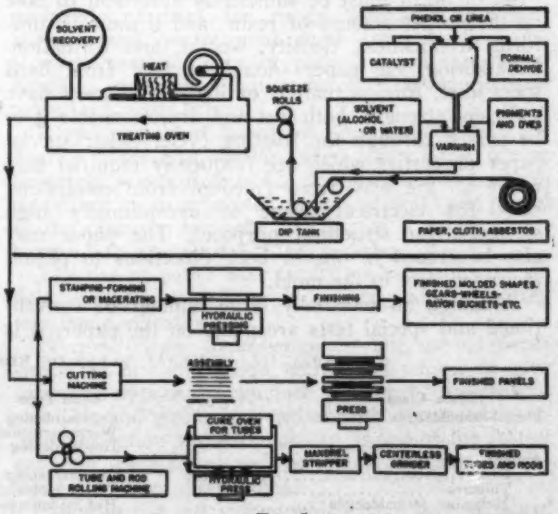

Fig. 5

Diagram of the Resin Impregnating Process (Based on Sketch in 1943 Plastics Catalog).

phenolic resins require appreciably higher values, 10 to 12% being common.

The importance of properly conditioning the paper before lamination has been shown in a paper by Croup *(2)*.

The "dry" process uses a solid resin which is melted and flowed onto the moving paper, generally as it passes over hot plates or rolls. The treated paper requires little drying, and the "volatile" is more easily controlled. A modification of this process uses a special type of a naturally liquid resin whose viscosity is reduced by heat to the point where the resin will readily impregnate the web of paper. The treated paper, without drying, can then be assembled for pressing or winding into tubes or rods.

Both the knife-coating and the spray-coating processes are self-explanatory and are relatively little used in treating paper for this type of laminate. They find their greater use in resin coating or treating paper for packaging and similar applications.

Paper for Impregnation and Lamination

Because of its good absorptive properties, rag paper was the first used for resin impregnation and still accounts for a considerable portion of the impregnating paper. Satisfactory grades of sulphate and purified sulphate paper were soon produced and have found extensive use since their cost is markedly lower than rag and the strengths are generally higher. Some alpha papers are used particularly with the light colored urea or melamine resins. Sulphite papers, either bleached or unbleached, have not found extensive use in the plastics industry because they generally are considered as not being sufficiently absorptive. Recent work at the Forest Products Laboratory and elsewhere in the industry has introduced a special high strength paper of the so-called "Mitscherlich" type which is finding considerable use in the wartime economy. Improvements in paper manufacture have permitted the use of specially bleached sulphite for certain applications. Papers containing certain long fibers, such as sisal, hemp, fiber glass, etc., are also being used.

Regardless of the type of paper used or the type of application to which the product is to be put, there are certain general characteristics which the paper must have in order to be acceptable for impregnation. First of all, it must be sufficiently absorbent to take up the proper amount of resin; and it must be uniform in thickness, density, weight, and formation. In addition, the paper should be free from hard spots, dirt, foreign matter, or lumps and must have sufficient strength, both wet and dry, to enable it to be passed through the treating cycle. Other special paper properties which are frequently required may range all the way from freedom from conducting salts for electrical usage to exceptionally high strengths for structural purposes. The paper may also be creped in one or both directions to permit increased flow in the mold.

Although an unusually large number of conventional and special tests are made on the paper, it is generally admitted that no test or set of tests will more than indicate the suitability of a paper for resin treatment; the final answer frequently can be obtained only by actual use tests. This is a challenge to the paper technologist to develop a satisfactory test, or set of tests, to properly evaluate paper intended for resin treatment.

TABLE IV.—AVERAGE PHYSICAL PROPERTIES OF VARIOUS MATERIALS

Material	Specific Gravity	Ultimate Tensile Strength p.s.i.	Ratio of Tensile Strength to Specific Gravity p.s.i.	Compressive Strength p.s.i.	Ratio of Compressive Strength to Specific Gravity p.s.i.
Laminates					
Kraft paper	1.35	16,000	11,800	38,000	28,100
Absorbent paper .	1.35	11,000	8,150	31,000	23,000
Fineweave fabric..	1.35	12,500	9,250	35,000	25,900
Special sulphite					
Parallel Laminated					
Parallel grain	1.40	34,000	24,300	19,000 [1]	13,570
Cross grain..	...	17,000	12,150	17,000 [2]	12,140
Cross laminated.	1.40	25,000	18,000	18,000 [1]	12,900
Fiber glass [3] ...	1.65	45,000	27,270	28,200	17,100
Stainless steel (18-8)	7.85	185,000	23,600	150,000 [2]	19,100
Aluminum alloy (24-St.)	2.80	62,000	22,100	40,000 [2]	14,300
Magnesium alloy (A.M.-585)	1.81	46,000	25,400	35,000	19,300
Aircraft spruce (Douglas fir)	0.43	10,000	23,300	5,000	11,600
Birch plywood	0.80	13,100	16,400	5,700	7,100

[1] Compression "edgewise," that is, perpendicular to the plane of molding pressure.
[2] Yield point in compression.
[3] Continuous filament warp, thin cotton thread welt.
Data: Mostly taken from Caldwell. *Modern Plastics*, Aug., 1943, p. 82.

Laminating or Converting to Final Form

The resin treated paper may be converted to its final form—that is, "molded," "pressed" or laminated by any of several methods. It may be cut into square or shaped sheets and stacked on a flat plate or shaped around a curved form, or it may be wound on a mandrel to form tubes or rods. The conversion of the pile or roll of loose resin impregnated sheets into a homogeneous solid product is effected by the proper applications of heat and pressure. Formerly, for all phenolics, and still for most commercial applications of ureas and melamines, high pressures of the order of 1000 to 2000 p.s.i. or greater had to be used. The relatively recent development of satisfactory low pressure resins and the introduction of low pressure molding techniques have expended the use of all laminates very greatly and have given great promise for the future. Here, pressures varying from contact pressure to 250 to 300 p.s.i. are used.

The rapid development of the so-called "bag molding" process, or other processes whereby "fluid" pressure is applied through a rubber or other membrane by means of a heated liquid or gas under pressure, has been most important in that it permits the molding of larger and more complex shapes than had previously been possible with all rigid surface dies. Because of the uniformity of the pressure at all points a somewhat lower molding pressure can be used to obtain equivalent results than with a fixed surface mold. Table III shows some characteristics of resins commonly used for low pressure laminates.

TABLE III.—GENERAL TYPES OF RESINS USED IN LOW PRESSURE MOLDING

Resin Class	Resin Type	Hardening Temperature	Molding Time	Molding Pressure, p.s.i.
Phenol-formaldehyde	Cold-hardening	70—140° F.	30 Min.—12 Hr.	Contact— 75
	Warm-hardening	140—220° F.	15 Min.— 2 Hr.	Contact—250
	Hot-hardening	280—360° F.	5 Min.— 1 Hr.	Contact—250
Amine:				
Urea	Cold-hardening	70—140° F.	10 Min.— 4 Hr.	Contact— 75
Thiourea	Warm-hardening	140—220° F.	5 Min.—15 Min.	Contact—200
Melamine formaldehyde	Hot-hardening	260—300° F.	5 Min.— 1 Hr.	150—250
Allyl-type resins	Warm-hardening	Low 80—100° C.	Very long 2 hrs. at 80° C. + 2 hrs. at 100° C. for ¼" panel	Contact

"C" Stage Molding or Post-Forming of Laminates

Considerable interest has been aroused in recent applications of the technique of "C" stage or post-forming of cured flat sheet laminates into curved or drawn articles. The technique has been most successful with fabric base laminates where truly amazingly intricate shapes have been formed, but it has also found some applications for paper base stock where the curvature is simple and the draw limited. It is possible to apply this technique because some residual thermoplasticity probably remains in the cured laminate.

Properties and Use

Physical Properties of Laminates

During the past two years very intensive engineering studies have been made of the various physical properties of all types of laminates. Considerable data have been published in the various technical journals, notably *Modern Plastics*. However, for purpose of comparison, it seems advisable to summarize in the following table (Table IV), the more important properties of some of the commonly used structural materials.

In this table the specific gravity and the tensile and compressive strengths of several different types of laminates and of some other representative structural materials are compared. It is interesting to note that the enormous variations in tensile and compressive strength shown by different materials when compared on a volume basis are, to a considerable extent, equalized within fairly close limits when the comparison is made on a weight basis.

The Forest Products Laboratory's announcement of the development of a new type of impregnating paper characterized by the relatively high tensile strength which its laminates possessed awakened a tremendous amount of interest in a number of paper mills—an interest which appears to have been out of proportion to the actual importance of the discovery. This paper was received with mixed feelings by the laminators and molders—feelings which ranged all the way from enthusiastic acceptance to emphatic rejection. Appreciable amounts of this paper are being made and used in the wartime economy. Some of the more important physical properties of the laminates made from this type of paper, and named Papreg by the Forest Products Laboratory, are shown in the following table (Table V).

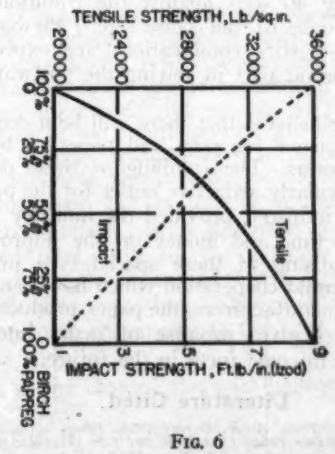

FIG. 6

Tensile Strength and Impact Strength of Papreg-Birch Veneer Combinations.

TABLE V.—STRENGTH PROPERTIES OF HIGH STRENGTH PAPER BASE LAMINATES

Physical Property	Press Laminated 75 p.s.i., 325° F.		Bag Molded 75 p.s.i.	
	Parallel Laminated	Cross Laminated	Parallel Laminated	Cross Laminated
Tension, p.s.i.				
Ultimate—with grain..	36,000	25,000	26,200	22,400
across grain..	18,000	.....	21,700	.....
Modulus elasticity—				
with grain..	3,000,000	2,200,000	2,300,000	1,900,000
across grain..	1,500,000	.....	1,900,000	.....
Compression, p.s.i.				
Ultimate, edgewise—				
with grain..	19,000	18,000	18,700	17,900
across grain..	17,000	.....	16,500	.....
Flatwise	40,000	.....	47,200	46,900
Impact, Izod (ft. lb./in. notch)				
Lengthwise—				
notched flatwise..	5.0	4.0	.....	.....
notched edgewise..	0.8	0.7	.....	.....
Crosswise—				
notched flatwise..	2.0	.....	.....	.....
notched edgewise..	0.6	.....	.....	.....
Water Absorption—% 24 hr. ⅛ × 2 × 2 inch specimens	2–4	2–4	2.3	2.7

Data taken from Lewis. 1944 *Plastics Catalog.*

It is evident that this material possesses exceptionally good strengths in tension but that it has a relatively low compressive strength and poor impact resistance as measured by the Izod or by other methods. This latter fault—a fault possessed in common by practically all paper base laminates—has prevented them from receiving any wide acceptance for stressed structural parts. The future of the so-called high strength paper laminates is somewhat problematical; however, even if the high strength paper should pass completely from the picture, its contribution in the form of an awakened interest in the potentialities of paper laminates has been invaluable to the paper industry.

Use of Paper Base Laminates

The many peacetime uses of paper laminates are well known. Applications in the electrical field and in the manufacture of tubes, rods, sheets, and molded articles where the properties of chemical and electrical inertness, light weight, good surface appearance, relative ease of fabrication and installation, and reasonable strength are well known. About 70% of the pre-war laminates were paper base. The demands of war have brought about their use in many new products and found undreamed of uses for them in old products. The airplane industry has found a multitude of uses for paper laminates for non-stressed and semistressed parts (and even a few stressed parts of certain planes), such as doors, cowlings, seats, ammunition boxes, flooring, jettison tanks, and many others.

A special type of laminated flooring is used in the Martin Mars and similar cargo ships. The saving in weight is reported as 423 pounds per plane which, according to an estimated saving of $500 per pound to the operator over the lifetime of a cargo plane, amounts to a total of $21,500 per ship.

The use of paper base laminates as piping for oil field exploratory drilling is a new and fascinating wartime application.

Plywood-Paper Combinations.—The use of paper laminates in combination with wood veneer to give improved appearance, surface resistance, dimensional stability, and strength, together with decreased moisture absorption and flammability, is one of the fastest growing wartime, as well as one of the most promising post-war, applications.

Some of the test values which have been obtained with varying combinations of high strength paper and birch veneer are shown in Figs. 6, 7, and 8.

Decorative Laminates.—Decorative laminates for table tops, wall panels, doors, and counter tops were in quite wide use prior to the war. The war accelerated development of better resins, particularly the transparent melamine resins, opens up a whole new field for their use in furniture, housing, and industrial applications. The combinations possible with melamine laminates and wood veneer are particularly appealing. A real challenge is offered to the paper industry to provide, at a price which will help to bring these laminates into general use in the low price field, a satisfactory paper for these applications.

Pulp Preforms and Resin Filled Fiber

While pulp preforms, wherein the resin is intimately mixed with the fiber in a beater or some such mixing device, are among the oldest of fiber-resin combinations, their development has been accelerated by war demands and by the introduction of an improved vacuum technique for their formation. The Keyes Fibre Company with their product "Kysite" and the Hawley Fibre Company, among others, have pushed the use of this type of material. Many of the resin producers are actively investigating the varied possibilities inherent in this method of combining fiber and resin. The following data taken from a recent report describe the results obtained by Monsanto Chemical Company with kraft pulp preforms. (Table VI).

TABLE VI.—PHYSICAL PROPERTIES OF KRAFT PULP-PHENOLIC RESIN PREFORMS MOLDED AT 800 P.S.I. AND 320° F.

Resin Content	Tensile Strength	Flexural Strength	Impact Strength Notched Izod ft. lb./in. of notch	Water Absorption 24 hrs.
%	p.s.i.	p.s.i.		%
55	13,400	18,200	1.09	0.42
45	13,500	16,400	2.72	0.64
35	12,600	18,600	4.80	0.82
25	12,600	15,200	6.64	24.3
15	12,200	14,000	6.96	70.6

Data: Haslanger and Mosher. *Modern Plastics*, July, 1943, p. 77.

Future

Predictions as to future trends are always dangerous. However, certain statements can be made with probable safety. It seems fairly certain that plastics will find an increasingly large use in cargo and passenger planes. The struggle to reduce plane dead weight is going on constantly. Dr. C. C. Furnas, Director of Research, Curtiss-Wright Airplane Division, recently said *(3)*, "The experience of commercial airlines has in the continental United States been that every pound of weight added to the structure of a plane costs $100 in terms of lost revenue during the average 5-year useful life of the plane. In cases of longer runs such as the trans-oceanic services, the weight penalty amounts to as much as $100 per year per pound—and these are conservative figures." The wider utilization of plastics in planes is confidently expected.

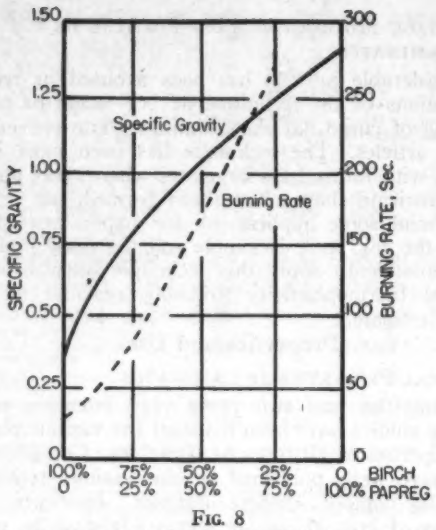

FIG. 8
Specific Gravity and Burning Rate (100% Papreg Is Self-Extinguishing).

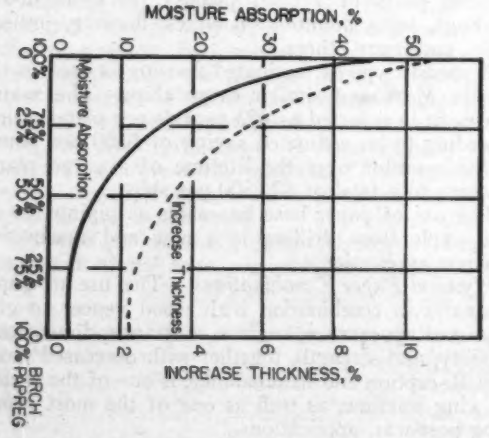

FIG. 7
Moisture Absorption and Increase in Thickness at Center. 24 Hours (2 × 2 × ⅛ Inch Piece).

The anticipated postwar housing boom looks like a natural outlet for a large volume of plastics and, particularly, paper and fiber moldings and laminates. Many industrial designers and architects are aware of the possibilities inherent in light weight, easily fabricated, strong, and reasonably priced plastics. It has been estimated that 1,000,000 new homes per year for the first 5 years will be required in the United States alone. A British publication claims that, following the war, a total of 125,000,000 new homes will be needed in Europe. It has been stated that for the year before the war 80% of the American homes needed minor repairs and 20% major repairs or replacement.

Mr. R. V. Boughton, a British designer, has planned a house of plastics and bonded materials weighing only 40 tons against the traditional 125 tons for a house of the same size. Plywood and wood veneer-plastics combinations are expected to play an important part in solving the postwar housing problem.

The author believes that there will be a constantly increasing demand for pulp and paper to be combined with resins. The fulfilling of these demands offers a particularly attractive outlet for the products of the paper industry, provided the industry is willing to spend time and money on the improvement and merchandising of these special type products. The very splendid cooperation which has been shown by the resin manufacturers, the paper producers, and the fabricators gives promise of many interesting developments to come forth in the future.

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Fiber Cans and Containers for Post-War*

By D. G. Magill[1]

Abstract

Fiber cans and containers are manufactured on winders of the spiral, convolute, and lap seam types from such paper products as chipboard, tube stock, cover stock, glassine and greaseproof and label papers. It is expected that proportionately the same quantities of the paper products now used will be used in the future but that the actual tonnage will probably be considerably greater.

The functional properties of paper and paperboard have been developed during the war and these developments should lead to an increased usage of the fiber can. The various aspects affecting the post-war market are discussed.

The subject of "containers" is a very broad one and as the author does not feel qualified at this time to discuss such types of containers as solid fiber, corrugated, or drum shipping containers, his remarks are confined to the evaluation post-war wise of papers and boards involved in the manufacture of fiber cans and allied products.

To understand more clearly the statements with regard to the uses of various types of paperboard in the fiber can industry, the fundamental types of containers manufactured by the average concern engaged in making this class of product are described briefly.

The oldest form of fiber can manufacture, unless one wishes to consider the original convolute hand winder, was and is performed on what is known as the "spiral winder," a machine which takes two or more plies of paperboard with suitable adhesive applied to them, winding them spirally into a cylindrical tube which is subsequently cut off into can length and either paper caps or metal ends are then applied, the fiber bodies being labelled with a printed label applied either by the can manufacturer or by the packer. The latter usually employ what is known as a "spot labeller." The familiar salt can with a pouring spout or the cleanser can with the disintegrator top illustrates this type.

The other general type of fiber can is manufactured on a convolute winder which takes a single sheet of paperboard, usually of a lighter caliper than the spiral winder, applies a suitable adhesive to it and winds it on a revolving mandrel in such a manner that the single ply of paperboard is wound convolutely upon itself, the number of plies being governed as in the spiral type by the strength requirements of the product which is to be packed in it. The convolute winder may be of single or multi-mandrel type but is usually equipped with label magazines which permit automatic application of the printed label, utilizing the adhesive employed for winding as the means of holding the label to the outside of the container. This produces a fiber body of very neat appearance as the label becomes a part of the body itself.

As in the case of the spirally wound tube, paper caps or metal ends are applied to complete the container.

There is one fundamental difference that should be mentioned at this point and that is the convolute winder is able to produce oblong, square, and other irregularly shaped tubes whereas the spiral winder is confined to the cylindrical type as the mandrel is stationary. The oblong spice can found in almost every kitchen illustrates this type.

A third type of structure much less commonly used is the lap seam type which consists of a single ply of paperboard formed into the body, the adhesive being placed at the side lap only. This type can be made into irregularly shaped or round bodies and is completed in the usual way by applying either metal or fiber ends as in the case of the other types just described.

In all three types of fiber cans, special functional liners, treated papers, etc., may be added during the formation of the bodies in order to produce moisture-proof, liquid-tight, or greaseproof containers.

The fiber can industry also includes manufacturers of mailing cases, textile cores, cones, etc., but as the fundamental methods of manufacturing these products are similar to those above described except for certain specialties, the machinery and methods described cover those used by the manufacturers of such products.

Although many types of papers and boards enter into the make up of the average fiber can, by far the most widely used in its various forms is the friend of the carton, folding, and set-up box makers, that ubiquitous board known as "chip."

With a kraft lining, chipboard is also used in enormous quantities in the manufacture of both corrugated and solid fiber shipping containers as well as in the make-up of fiber drums, etc.

The particular form of chipboard most used in the fiber can industry is known as "tube stock" and has a higher content of kraft pulp or kraft papers than ordinary chip and is well suited in rigidity and toughness for providing fiber can bodies with the carrying qualities they must have to deliver such commodities as salt, spice, baking powder, cocoa, and many other food products as well as drugs, chemicals, scouring powder, and scores of dry products of a similar nature.

Another form of board has been highly developed and used in considerable quantities in the past several years. It is known as "cover stock" and is used for bottom and top slip covers for many types of round cans. This board in former years appeared on the market as a sheet usually 0.025 to 0.030 in caliper and had a cooked straw back with a kraft or sulphite liner. Much of this stock now is largely made from waste papers containing a high percentage of kraft. It is lower in cost and generally is more satisfactory in strength and its performance in high speed cap drawing dies. This board is illustrated best as the type used on round cereal cans, salt cans, and the like, the liner of which can be colored to suit the needs of the packer. It also may be combined with

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asphalt to newsprint, etc., to impart some moisture resistance to the can.

In addition to the various types of waste paperboards used, there are the hydrated sheets such as glassine and greaseproof papers ranging from 25 to 40 pounds in basis weight and which are used for functional liners in cans designed for products requiring grease and moisture resistant containers, or for other special types of products.

There is an appreciable tonnage of label paper stocks used in the fiber can industry in the form of liners as well as labels themselves. These labels usually go to the fiber can manufacturer in the single or gang form and are applied by automatic or semi-automatic means during the manufacture of the fiber can itself, although in many instances customers provided with automatic labelling means, apply them in their own plants after the cans are filled.

Consumption of Paper

In general, it is believed that these types of papers and boards just described will continue to be used in proportionately the same quantities as they have been used in the past. In actual tonnage, the post-war consumption of such papers will probably be considerably greater than during the years leading up to the present war period. This is because many manufacturers undoubtedly having been forced to use the fiber can for their products formerly packed in metal and glass, in some instances, at least, have found them to be entirely satisfactory and capable of delivering their products to the ultimate consumer safely and at the same time providing, when suitably labelled, a package that has shelf appeal and other desirable merchandising qualities.

To illustrate the large increase that the fiber can and tube industry has experienced within the last several years, figures are quoted from statistics provided by the National Fibre Can and Tube Association:

In 1939 the selling value of all products manufactured by member companies engaged in the manufacture of fiber cans, tubes, cores, and the like, amounted to approximately $18,000,000. The paperboard consumed to provide these products was estimated at 410 million pounds.

In 1942 the selling value had increased to approximately $35,000,000, and the paperboard consumption of all kinds needed to produce this selling value was estimated at 485 million pounds.

It has been estimated that in 1944 the selling value of fiber cans and allied products will have reached the total of $55,000,000, and a consumption of paperboard amounting to 680 million pounds.

The money value and paper consumption of the fiber can and tube industry during these years is actually much greater as the statistics available do not cover all the fiber cans and containers manufactured by many large concerns for their own use, such as the cereal companies and the packing companies, both of which manufacture cereal and scouring powder cans which in money value and paper consumption would amount to at least 40% of the totals mentioned above.

It is believed that it is fair to assume that much of the increase as shown in 1942 over 1939 will be maintained and that papers and paperboards involved in the manufacture of fiber cans and allied products will be on a greater scale than in the years just prior to Pearl Harbor.

As the post-war period develops a large importation of Scandinavian and other foreign pulps can probably be expected which will not only have the effect of lowering the price of basic materials such as chipboard but may lead to the development of boards made entirely from virgin materials. The author has in mind particularly groundwood and sulphate sheets that could be produced at a reasonable cost and would form the base stocks of many types of fiber cans and containers which could be suitably decorated directly upon the sheet itself without regard to label paper and would also lend themselves better to moistureproof and greaseproof treatments of various types.

The functional properties of paper and paperboard have been developed considerably during the war period and there is every reason to believe that these developments will lead to a wider use of the fiber can. This is believed to be particularly true in the type of composite can having metal ends and fiber bodies and which lend themselves to the development of a greater degree of protection than has been the case with certain types of all fiber containers.

These special papers and combinations of paper usually require at least one well hydrated sheet such as glassine or greaseproof, these being best suited as carrier sheets for moistureproof lacquers, coatings, as well as wax combinations.

Combinations with regenerated cellulose such as cellophane will probably be used in greater quantities than heretofore and as metal foils become less costly they also will be combined with papers for use in the structure of special types of fiber cans.

All of this adds up to the fact that as the fiber can enlarges its field because of functional improvements, greater quantities of light weight papers will be used.

During the past five years, in cooperation with the paper mills, manufacturers of fiber cans have introduced tests and specifications designed to control the quality of these raw materials more thoroughly than heretofore.

In the past, convertors have been satisfied with checking incoming shipments for caliper, moisture content, and basis weight and many times no tests were made at all. Now, many tests such as tear, tensile, porosity, as well as examinations for formation and finish are performed on tube and cover stocks which certainly will lead up to more rigid specifications being placed upon all papers and boards used in fiber can and tube manufacture. This will mean that many paperboard mills will have to equip themselves with more scientific apparatus and will also have to provide themselves with a conditioning room which will maintain a fixed relative humidity and temperature. This will tend to maintain paperboard on a higher level of quality and consumption.

The amount of sizing alone in many sheets of paperboard has been found to be of major importance as the time of setting of adhesives in highly automatic equipment is dependent upon the ability of paperboard to absorb the water contained in the adhesive film. Any marked variation in sizing, therefore, cannot be tolerated and must be controlled at the paper mill if the board in question is to be acceptable.

Of much interest in the evaluation of boards in the post-war picture is the increased number of grades and calipers made on the fourdrinier machine. Although the physical characteristics of fourdrinier boards show some disadvantages as compared to

cylinder types in fiber can and tube manufacture, a number of paper mills have succeeded in making fourdrinier board especially in calipers ranging from 0.008 to 0.014 which make excellent body stocks and a greater use of them in the future of our particular industry is predicted.

Post-War Situation

There is another factor in the post-war development of the fiber can which is involved in machinery built especially for war products containers. In the artillery ammunition container field alone there are in operation at least 75 spiral winders as well as seamers, dies, presses, etc., used as auxiliary equipment to these winders, all of which are capable of being modified for fiber can manufacture.

If the Government should choose to sell this equipment or allow it to be operated for peace time uses, as there has been some talk of doing in Washington, there might be for a time at least a rise in fiber can volume and a consequent increase in the tonnage of paperboard and specialty papers consumed.

It has been stated that there will be at least 250,000 new products introduced after the war, some of which are developments from wartime discoveries. Unquestionably, many of these will be packaged in fiber cans and this volume will also tend to maintain a part of the increase in tonnage of paper and paperboard consumed by this industry.

The post-war possibilities of fiber can papers depends greatly also on the price at which they are to be sold. If the price remains on a high level and steel declines, then the margin between metal and fiber cans may become so narrow as to reduce the volume of such fiber cans sold. This disparity in prices, however, is not anticipated.

The number of so-called marginal paper mills operating after the war will also have a bearing on prices as there are few in the fiber container business who do not definitely recollect what influence such mills had on the price structure in the past.

In conclusion, it is the author's belief that the spread between the price of metal and fiber containers post-war-wise will continue as before and that with the new functions developed, or to be developed, for fiber cans, the industry can look forward to maintaining at least 30% of the volume gained during the war.

Fibrous Building Materials*

By P. N. Hills[1]

Abstract

An indication is presented of the future market for fibrous building materials. It is expected that there will be an expending usage because of the structural and insulation properties of these products.

The author's company manufactures, among other things, coarse papers, building papers, prepared asphalt roofing, structural insulating board, insulated exterior wall sidings, and felt base floor coverings, all of which originate on a paper machine and contain some combination of rags, pulp, wood fiber, and paper stock.

Building Statistics

A few facts and figures are given to convey some of the optimism regarding the prospects for building materials over the next decade.

In round figures (taken from the 1940 census) there are 29 million residential structures in the United States classified as follows: Urban 14 million, rural nonfarm 7.5 million, and rural farm 7.5 million. Over 27 million of these are one- and two-family dwellings. Twenty-four million houses have wood exterior, three million have brick, and one million have stucco. One million are not classified as to exterior.

The 29 million structures contain 37 million dwelling units, and 27 million of these were built prior to 1925—consequently are at least 19 years old. In 1934 (10 years ago) a United States Department of Commerce survey of 64 representative cities disclosed this interesting information regarding the condition of our houses: 38% were in good condition, 44% needed minor repairs, 16% needed major repairs, and 2% were unfit for occupancy. Note that two out of three houses needed some attention 10 years ago.

Coming back to the 1940 census of 37 million dwelling units: Over 6 million need major plumbing repairs, 17 million don't have full plumbing facilities, 11 million don't have running water, 20 million don't have central heating, and 7 million use kerosene or gasoline for lighting. Many other statistics are available, such as 6 million have no radios, only 15 million have mechanical refrigerators, and so forth, but the obvious deduction is that there will be plenty of business available in just remodeling and modernizing our present homes.

New Construction Prospects

Now for an estimation at the new construction prospects. No less an authority than the National Housing Agency estimates that 12,600,000 new nonfarm homes and apartment units will be needed in the first 10 post-war years. This is 1¼ million houses a year. Henry Kaiser estimates ten million houses over the first 10 years with 1½ million the first year. A very common and very easy figure to remember is one million a year. Keep in mind this is residential construction only and does not include industrial and public buildings. In passing, the author was interested to read that one of the "Building Services" includes 680 public administration buildings, 43 Post Offices, and 318 jails and penitentiaries, as being in the planning stage, involving the expenditure of 180 million dollars.

Drastic Decline in Expenditures

A measure of the drastic decline in construction expenditures under present building restrictions is shown in the total of 3 billion, 200 million dollars

* Presented at the meeting of the New England Section of the Technical Association of the Pulp and Paper Industry held in Boston, Mass., Dec. 15, 1944.

[1] Assistant to Director of Mfg., Bird & Son, East Walpole, Mass.

for the first 9 months of 1944 compared with 6 billion, 600 million dollars in the corresponding period the year before. These figures are for all types of construction.

Future Market

Even under the restricted business just referred to the asphalt roofing volume in 1944 has been very heavy and up to the current capacity of the industry which, of course, has been limited by manpower and material restrictions. It is believed that this has been largely replacement business.

The asphalt roofing industry is comparatively young. It went into high gear in about 1920 to 1925 with the introduction of colors and blends in shingles. About 1930 they were really going to town and even in the deep depression years of 1932, '33, and '34 did not lose too much ground in that the operations level remained about 70% of normal. Now 1925 is 19 years ago and the average life of a roof is 12 to 20 years depending upon the grade of roofing and the section of the country. Therefore, we are in our first replacement cycle, which can be expected to become heavier during each of the next 10 years.

One seldom sees a wood single roof replaced with wood—at least in the cities—but often one sees an asphalt shingle roof go on right over wood shingles; in fact, that is one of the selling points for asphalt roofing. Therefore, not only replacement business from asphalt roofs but also from other kinds of roofs can be expected.

The current annual production rate of the industry is 48 million squares (a square covers 100 square feet) and maximum capacity is probably not over 60 million squares because of equipment bottlenecks. It is reasoned that if the replacement market can support present capacity, the addition of one million new houses a year will simply overwhelm the industry with orders.

The asphalt roofing industry isn't satisfied when shingles are put on the roofs of houses; it wants to put them on the side walls too. This development started about 1929 with strips of colored mineral surfaced roofing cut into brick dimensions but has since progressed into what is called insulated siding —brick design, which is a panel ½ inch thick structural wood fiber insulating board about 14 by 43 inches coated with asphalt and surfaced with colored granules in brick design. Where the average roof may take 15 squares of shingles, the sides of the same house will take twice that quantity of siding. Do you blame the industry for eying hungrily those 24 million houses with wood exterior? Theoretically, here is a potential market which will keep the insulated siding industry going for 45 years.

Lumber has become one more of the hard-to-get products. The structural insulating board industry offers a substitute for 25/32 inch wood sheathing in the form of 25/32 inch wood fiber insulating sheathing with many superiorities over the wood sheathing, such as:

1. Three times the insulation value of wood sheathing which means added winter and summer comfort.
2. Substantial fuel savings.
3. Large size panels up to 4 by 12 feet which provide a minimum of joints.
4. Greater bracing strength than wood sheathing applied horizontally.
5. Less waste in time and material in application, and an absolutely uniform product without cracks, splits, and knotholes.

It is believed that many users who have bought this product as a substitute will not go back to the original product.

To sum up it is believed the building materials business will be very good although the matter of profit will be a challenge to management to perform the miracle of squeezing it out of the ever narrowing margin between increasing costs and fixed or decreasing selling prices. All predictions will go down the drain unless not only this profit can be made but also the cost of residential construction can be kept to a figure within the means of the mass market by new methods and products.

Future Raw Materials

Many of the building products originate on a paper machine and contain some combination of rags, pulp, wood fiber, and paper stock, e.g., the felt base of asphalt roofing comprises rags, wood fiber, and paper stock and averages about 15% of the finished roofing. Of these three materials, rags are highest in price and the most variable in quality; not only most variable but extremely variable and especially so today when with a scarcity of pulp, many mills try to eke out the supply by using more rags. They also require most horsepower per ton to process up to the paper machine.

After the rag stock is sorted to get passable grades for use in the finer papers, the residue is classified as a roofing rag which can be pretty awful. Because of current and predicted changes in textile fibers and their treatment, manufacturers are afraid that they will need a force of chemists in the cutter room whose full time job would be to identify fibers.

Ten years ago wood fiber of the Asplund variety was not known in felt. Today it averages 20 to 30% of the furnish and displaces rags but there is a limit to the amount that can be used for reasons of bursting and tensile strengths. It might well be possible to find a pulp product which could displace rags entirely at a cost that could be justified by the far superior and simpler control of the finished product specifications which would result.

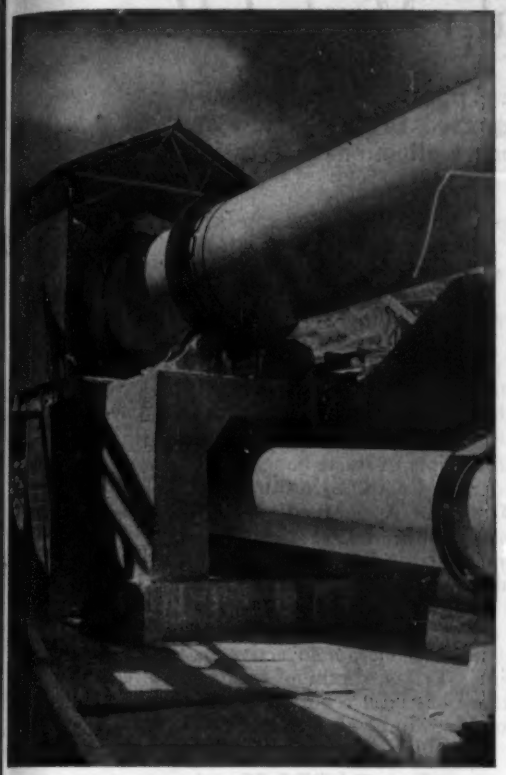
Development Possibilities

In a bulletin issued last month by the asphalt roofing industry quoting from "Housing Costs"—a new pamphlet issued by NHA aimed at reducing the cost of home building, is the following item: "Although certain new materials and methods have been introduced into the building of houses in recent years, there is considerable evidence to indicate that most of the changes have improved the quality of houses only by increasing their cost, and that low costs have been made possible only by reducing the size and quality of houses.

"In good quality houses constructed of wood there are as many as 14 individual layers in the exterior wall, each of which is applied separately by hand. These include finish coat exterior paint; second coat exterior paint; priming coat exterior paint; exterior siding, clapboards or shingles; building paper; sheathing; studs and framing; insulation; vapor seal; lath; brown coat plaster; finish coat plaster; sizing coat interior paint; finish coat interior paint.

"Although each of these layers serves a particular purpose, it should be possible to develop a material which would perform the necessary functions of an exterior wall and yet could be efficiently molded into single thickness wall panels or sections thus combining many layers into one."

This is a large order but paper base products are already being considered.



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Write us making appointment to have a talk with our engineer.

TRAYLOR ENGINEERING & MANUFACTURING CO.

ALLENTOWN, PENNA., U. S. A.

WRIGHT-HIBBARD

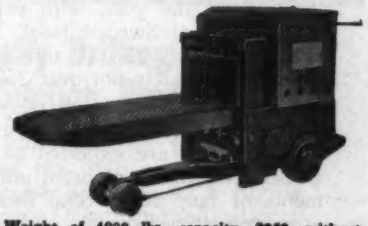
INDUSTRIAL ELECTRIC TRUCK CO.

INCORPORATED

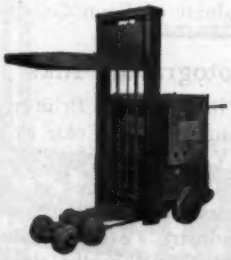
Phelps, New York

Platform size 24 x 42 x 11" high, low position; 15" high when elevated. Capacity: 2000, 3000, and 4000 pounds.

Capacity 2000 lbs. on forks 30" long. Truck turns from a 5' aisle into an intersecting aisle of 5'.



Weight of 4000 lbs. capacity—2850, without battery. Truck turns from a 5' 4" aisle into an intersecting aisle of 4'.



Platform 24" wide, 53" long and 11" high, low position. Capacity 2000, 3000 and 4000 pounds.

The Wright-Hibbard Telescoping high lift truck is designed to operate in the most congested areas of factories and warehouses. The exceptionally narrow width and short overall length found in other Wright-Hibbard trucks are retained in this model.

Platform 24" wide, 42" long and 9" high, low position. Weight of 4000 lb. capacity—2800 without battery.

New York Paper and Pulp Market Review

Paper Supply For Civilian Consumption Appears More Favorable —Shipments of Swedish Wood Pulp Expected In July—New and Old Cotton Rags Active — Waste Paper Collections Increasing.

Office of the PAPER TRADE JOURNAL, Wednesday, June 27, 1945.

Paper production continues high and the present indications of government requirements for somewhat less paper in the future, are quite widely accepted as favorable signs for more paper for civilian consumption in the third and final quarters of 1945. Output of all types of paper in April was 1,424,710 tons, compared with 1,527,254 tons in March, 1945, and with 1,402,383 tons in April, 1944. More newsprint, fine paper, wrapping and bag papers was available in April 1945, but somewhat less of most types of paper were available than in March, 1945. The outlook is favorable.

The index of general business activity declined for the week ended June 16 to 141.6, from 142.8 in the preceding week, compared with 144.0 in the corresponding week in 1944. The index of paperboard production was 162.7, compared with 166.5 in the previous week, and with 157.5 in the corresponding week in 1944.

Paper production for the week ended June 16 was estimated at 91.5%, compared with 91.5% for 1944, with 87.0% for 1943, with 86.5% for 1942, and with 99.9% for the corresponding week in 1941.

Paperboard production for the week ended June 16 was 93.0%, compared with 95.0% for 1944, with 95.0% for 1943, with 69.0% for 1942 and with 88.0% for the corresponding week in 1941.

Wood Pulp

The outlook for a larger wood pulp supply is indicated in current reports which place the paper industry's needs at approximately 1,000,000 tons by the first of the year, with expectation of at least 650,000 tons of Swedish pulp. Monthly consumption is approximately 847,000 tons monthly, while inventories are probably not over 250,000 tons.

Reports from many quarters are more optimistic this week. Swedish shipments, averaging about 55,000 tons monthly, are expected to begin in about two weeks. Norway is reported unlikely to resume shipments of pulp for several months. A conservative estimate of Swedish pulp on hand places the tonnage at close to 955,000 tons.

Rags

Demand for new cotton cuttings is currently reported as heavy. Prices are firmly maintained by the steady demand for the papermaking grades at ceiling levels.

Trading in old cotton rags is active. Almost all grades are reported in good demand. Prices continue firm and unchanged.

Old Rope and Bagging

Demand for good old Manila rope continues heavy, with supplies under requirements. Other grades of fiber are in good demand. Prices are unchanged.

Although somewhat more inquiries and a little more buying activity is reported in some quarters in gunny this week, little change in scrap bagging is reported. Prices are unchanged.

Old Waste Paper

Increased collections of waste paper, in response to the special drives inaugurated, have resulted in better than normal collections. The summer months are normally periods of lull in salvaging. Reports from the midwest area are, however, definitely encouraging this week.

Total receipts of waste paper in April were 703,000 tons, compared with 681,000 tons in April, 1944, and 599,000 tons in April, 1943. Receipts at the mills in the first 4 months of 1945 were, however, 4.8% below the same period in 1944. Inventories for the 4 months were about 4.6% lower this year than in 1944.

Twine

Demand is moderate to active in the best grades of twine. Prices continue steady. No change of importance has been reported in the supply situation. Jute continues in good demand at this date.

New TAPPI Members

Gordon F. Allo, superintendent of control, Bathurst Power and Paper Company, Ltd., Bathurst, N. B., Canada, a 1933 graduate of McGill University.

Carl N. Andersen, research director, Puratized, Inc., 250 East 43rd street, New York, N. Y. a 1924 graduate of Columbia University.

Carlyle Harmon, production manager, Marathon Corporation Chemical Division, Rothschild, Wis., a 1930 graduate of Stanford University.

John A. Munyak, research leader, Marco Chemical Company, Sewaren, N. J., a 1938 graduate of Stevens Institute of Technology.

Peter Sadler, paper mill chemist, St. Cuthberts Paper Works, Ltd., Wells, Somerset, England. Attended College of Technology, Manchester, England.

G. Edward Soyka, president, Berkshire Cellulose and Paper Corporation, 86 North street, Pittsfield, Mass. Attended the University of Prague.

Clark E. Thorp, in charge of paper research, Chemical Engineering Group of Industrial Research, Armour Research Foundation, 35 West 33rd street, Chicago, Ill., a 1935 graduate of Fenn College.

Discusses Rotogravure Inks

A booklet entitled, "Rotogravure Printing," has been issued by the Gotham Ink and Color Company, Long Island City 1, N. Y.

It concisely presents the advantages of gravure printing and its many applications in the converting branch of the paper industry. Much factual and practical information is included in the description of the widely used gravure process, which employs thin, quick drying inks.

WAR is
Our Preoccupation
(as long as it lasts)
but
Paper Mill Machinery
is Our Business

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FROM BEATERS TO CALENDERS

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TOILET TISSUE *Makers*

IMPROVED toilet winders, interfolders, core cutters and embossers. Printing presses and sheeters for label printing and wrappers for wrapping. • High production machines, low cost operation and superior product. • Specifications and prices upon application —

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Avoid Costly Drilling When Cleaning Suction Press Rolls

Suction press roll cleaning in the past usually involved the drilling-out of each individual clogged hole. Now, a highly specialized, modern Oakite method, tailored to fit your particular conditions, eliminates this tedious, time-consuming necessity.

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OAKITE PRODUCTS, INC. 18A Thames St., NEW YORK 6, N. Y.
Technical Service Representatives in All Principal Cities of the United States & Canada

OAKITE Buy Bonds for Victory CLEANING

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, June 27, 1945.

BLANC FIXE—Quotations on blanc fixe continue unchanged. Demand is fair this week. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton, f.o.b. works.

BLEACHING POWDER—Current demand is active. Supply situation good. March output up at 2,950,000 pounds. Quotations continue unchanged. Prices on bleaching powder range from $2.50 to $3.10 per 100 pounds, in drums, car lots, at works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f.o.b. shipping point.

CAUSTIC SODA — Demand continues very heavy. Production high but below current needs. Supply tight in all grades. Solid caustic soda is quoted at $2.30 per 100 pounds; flaked and ground is quoted at $2.70 per 100 pounds; all in drums, car lots, at works.

CHINA CLAY — Quotations on china clay are unchanged. Current demand is reported fair. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mine. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Demand heavy with essential requirements met. March output up at 107,466 tons. Quotations are unchanged. Chlorine is currently quoted at $1.75 per 100 pounds, in single unit tank cars, f.o.b. works.

ROSIN—Offerings and sales light. "FF" rosin prices increased $1 by OPA: "G" gum rosin at $5.79 per 100 pounds, in barrels, at Savannah; "FF" rosin at $5.75 per 100 pounds in barrels, at New York; seventy per cent gum rosin size at $5.95 per 100 pounds, f.o.b. works.

SALT CAKE — Prices on salt cake are reported unchanged for the current week. Consumption is reported moderate at this date. Domestic salt cake is quoted at $15 per ton, in bulk. Chrome salt cake is quoted at $16 per ton. All prices in car lots, f.o.b. shipping point.

SODA ASH—Heavy demand continues for all-over requirements. March output up at 218,540 tons. Bulk lot shipments prompt. Bagged lots slow. Quotations continue unchanged. Current prices, car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Current corn receipts are less this week and demand is heavier. Prices firmer at this date. Starch prices continue unchanged. The pearl grade is quoted at $3.72 per 100 pounds; powdered starch at $3.83 per 100 pounds; all prices in bags, car lots, f.o.b. Chicago.

SULPHATE OF ALUMINA — Demand reported good. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.25 per 100 pounds, in bags, car lots, f.o.b. works. The iron free is currently quoted at $1.85 per 100 pounds, in bags, at works.

SULPHUR—Quotations on sulphur continue to conform to prevailing market prices. Demand active. Annual contracts are quoted at $16 per long ton, f.o.b. mines; the price at Gulf Ports is $17.50 per long ton.

TALC—Prices on talc continue unchanged. Demand good. Domestic grades are currently quoted at from $16 to $21 per ton at mines; Canadian at $24 per ton. All prices in car lots.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract	*$61.00	@	—
Sheets	69.00	@	—
* OPA Maximum Price.			
Kraft—per cwt.—Carload Quantities Zone A, Delivered			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—
* OPA Manufacturers' Prices.			
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.20	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.	5.75	"	6.00
Boards, per ton—			
News	*$50.00	@	—
Chip	*$50.00	"	—
Sgl. Mla. L.l. Chip	*62.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5, regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	" "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	" "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt extra

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated	$13.65@
No. 2 Glossy Coated	12.40 "
No. 3 Glossy Coated	11.60 "
No. 4 Glossy Coated	11.15 "
No. 1 Antique (watermarked)	10.25 "
No. 2 Offset	9.60 "
A Grade E. F.	9.35 "
A Grade S. & S. C.	9.60 "
B Grade E. F.	8.85 "
B Grade S. C.	9.10 "
C Grade E. F.	8.55 "
C Grade S. C.	8.80 "
D Grade E. F.	8.25 "
D Grade S. & S. C.	8.50 "

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Manufacturers Prices, Less Not Exceeding OPA Allowance

Bl. Softwood Sulphite	
Unbl. Softwood Sulphite	
Bl. Hardwood Sulphite	
Unbl. Hardwood Sulphite	
Bl. Mitscherlich	
Unbl. Mitscherlich	72.00 @
N. Bleached Sulphate	
S. Bleached Sulphate	
N. Semi-Bleached Sulphate	
S. Semi Bleached Sulphate	
N. Unbl. Sulphate	
S. Unbl. Sulphate	
Bl. Soda	
Unbl. Soda	
Groundwood	

Transportation Allowances

Applying to Producers of Wet Pulp.

Below 50% Dry Weight	
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

50%-80% Dry Weight	
Northeast	11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Pulp.

Above 80% Dry Weight	
Northeast	
Lake Central	
Southern	
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum price.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—	
New White, No. 1	6.50 @
Silesias No. 1	— "
New Unbleached	6.75 "
Blue Overall	— "
Fancy	— "
Washables	— "
Bleached Khaki Cuttings	— "
Unbleached Khaki Cuttings	— "

*OPA Maximum Prices

The Trade-Mark of
RELIABLE FELTS

The Waterbury Felt Co.
SKANEATELES FALLS, N. Y.

A TYPE AND SIZE FOR EVERY NEED IN MILL, FINISHING ROOM, CONVERTING PLANT

SAMUEL M. LANGSTON COMPANY, Camden, New Jersey

SCREENS
of Perforated Metal

The Harrington & King PERFORATING Co.

232 Fillmore St., Chicago 44, Ill. 114 Liberty St., New York 6, N. Y.

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Prepare NOW to Take Care of Increased Orders Which Will Come. Consider Necessary Repairs and Maintenance.

Also New Equipment of Improved Designs and Efficiency.

PAPER BAG MACHINERY—PAPER MACHINES
THE NEW MODEL "E" PAPER TRIMMERS

THE SMITH & WINCHESTER MANUFACTURING COMPANY
Plant and Offices at South Windham, Connecticut

PENNOTEX OIL CORPORATION
29 Broadway
New York, N. Y.

AMORPHOUS WAXES
Melting Points 120° F. to 205° F.

For the Manufacture of

LAMINATING PAPER . . GLASSINES . . WATER-PROOFING . . GREASE PROOFING . . EXTENDERS FOR PARAFFIN, FOOD CONTAINERS, CONTAINER LININGS, ADHESIVENESS AND PROTECTIVE COATING.

EMBOSSING ROLLERS

Roehlen Engraving Works, Inc.
324 St. Paul St., Rochester 5, N. Y.

Mfrs. of Engraved Embossing Rollers and Plates of Any Type and Description
Worn Rollers Re-Engraved.

Complete Designing and Engineering Service

For High-Speed, Dependable
PAPER CONVERTING MACHINES
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POTDEVIN

Paper Bag Machines, Aniline & Oil-Ink Presses, Waxing, Gluing, Varnishing, Laminating Machines.

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CAMACHINE
WINDERS & REWINDERS
Keep well ahead of the paper machine at any papermaking speed.
CAMERON MACHINE COMPANY - 61 POPLAR ST. BROOKLYN 2, N. Y.
Midwest Office: 111 W. Monroe Street, Chicago 3, Ill.

Old Rags

White, No. 1—		
Repacked	*1.80	—
Miscellaneous	*1.20	—
White, No. 2—		
Repacked	*2.90	—
Miscellaneous	*2.65	—
Third and Blues—		
Repacked	*2.20	—
Miscellaneous	*1.80	—
Roofing Rags—		
No. 1	*1.85	—
No. 2	*1.45	—
No. 3 (bagging)	*1.35	—
No. 4	*1.35	—
No. 5A	*1.35	—
Old Manila Rope	5.75	—

*OPA Maximum Prices.

Foreign Rags

Pre-War Quotations

All Prices nominal

New Rags		
New Dark Cuttings	2.25 @	2.40
New Mixed Cuttings	2.00	2.20
New Light Silesias	5.50	5.75
Light Flannelettes	5.50	5.75
New White Cuttings	7.00	7.50
New Light Oxfords	4.00	4.50
New Light Prints	3.00	3.25
Old Rags		
No. 1 White Linens	7.50	8.50
No. 2 White Linens	6.50	7.50
No. 3 White Linens	4.50	—
No. 4 White Linens	2.25	3.25
No. 1 White Cotton	4.25	4.75
No. 2 White Cotton	3.25	3.75
No. 3 White Cotton	2.50	3.00
No. 4 White Cotton	1.90	2.20
Extra Light Prints	2.00	2.40
Ord. Light Prints	1.75	2.15
Med. Light Prints	1.55	1.95
Dutch Blue Cottons	2.25	2.50
French Blue Linens	3.00	—
Checks and Blues	2.00	—
Linsey Garments	1.90	2.00
Dark Cottons	1.50	1.60
Old Shopperies	1.30	1.45
New Shopperies	1.45	1.50
French Blues	2.25	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—		
Foreign	Nominal	
Domestic	3.25 @	3.30
Wool Tares, light	3.25	3.50
Wool Tares, heavy	3.50	3.75
Bright Bagging	3.25	3.50
Manila Rope—		
Foreign	—	—
Domestic	*5.75	—
Jute Threads	5.50	—
No. 1 Sisal Strings	*4.00	—
Mixed Strings	2.00	—

*OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½ @	—
No. 1 Hard White Envelope Cuts	3.12½	—
No. 1 Hard White Shavings, ruled	2.50	—
Soft White Shavings, one cut	2.87½	—
No. 1 Soft White Shavings	2.50	—
Soft White Shavings, Misc.	2.15	—
No. 1 Fly Leaf Shavings	1.67½	—
No. 2 Fly Leaf Shavings	1.12½	—
No. 1 Groundwood Fly Leaf Shavings	1.25	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	—
Mixed Colored Shavings	.75	—
Mixed Groundwood Colored Shavings	.90	—
Overissue Magazines	1.67½	—
No. 1 Heavy Books & Magazines	1.92½	—
Mixed Books	1.10	—
No. 1 White Ledger	2.30	—
No. 2 Mixed Ledger, colored	2.00	—
New Manila Envelope Cuttings, one cut	2.87½	—
New Manila Envelope Cuttings	2.65	—
Extra Manillas	1.95	—
Mixed Kraft, Env. & Bag Cuttings	2.75	—
Kraft Envelope Cuttings	3.25	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	—
New 100% Kraft Corrugated Cuttings	2.25	—
No. 1 Assorted Old Kraft	1.75	—
New Jute Corrugated Cuttings	.90	—
Old 100% Kraft Corrugated Containers	1.75	—
Old Corrugated Containers	1.40	—
Box Board Cuttings	.72½	—
White Blank News	1.65	—
Overissue News	1.10	—
No. 1 News	1.00	—
No. 1 Mixed Paper	.95	—
Old Corrugated Containers	.82½	—
Mill Wrappers	1.10	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—		
India	.21 @	—
White Hemp	.21	—
Fine Polished—		
Fine India	.36	—
Unpolished—		
Box	.17½	—
Paper Makers	.17	—
Tube Rope	.19	—
Wall Paper	.20½	—
Wrapping	.23	—
Soft Fiber Rope	.19	—
Cotton	.25	—
(Hard Fiber)		
Medium Java	.18	—
Mex. Sisal	.16	—
Manila	—	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—	
New White No. 1	.07½
New White No. 2	.05½
Light Silesias	.05½
Black Silesias, soft	.03½
New Unbleached	.07½
Washable Prints	.04½
Washable No. 1	.03
Blue Overall	.05½
Cottons—According to grades—	
Washable shredding	.01½
Fancy Percales	.04½
New Black Soft	.03½
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04½
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03½

Domestic Rags (Old)

White No. 1 — Repacked	3.80	—
Miscellaneous No. 1	3.30	—
Miscellaneous No. 2	2.65	—
White No. 2 — Repacked	2.90	—
Thirds and Blues—		
Miscellaneous	1.80	—
Repacked	2.30	—
Black Stockings—		
(Export)	Nominal	
Roofing Stock—		
Foreign No. 1	Nominal	
Domestic No. 1	1.55	—
Domestic No. 2	1.45	—
Roofing Bagging	1.35	—
Old Manila Rope	5.75	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—		
Foreign	Nominal	
Domestic	3.00	3.50
No. 1 Clean bright—		
Sisal Strings	.94	
No. 2 Clean bright—		
Sisal Strings	.83	
Sisal Jute	.02½	.03½
Scrap—		
No. 1	1.25	1.30
No. 2	1.75	1.80
Wool Tares heavy	4.00	4.31
No. 1 New Light Burlap	3.00	4.00
New Burlap Cuttings	3.75	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	—
No. 1 Hard White Shavings, unruled	2.87½	—
Soft White Shavings, one cut	2.50	—
White Blank News	1.65	—
Soft White Shavings, Misc.	2.15	—
No. 1 New Light Burlap	3.00	4.00
New Burlap Cuttings	3.75	4.00

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled	2.87½ @	—
No. 1 Hard White Shavings, ruled	2.50	—
Soft White Shavings, Misc.	2.15	—
No. 1 Fly Leaf Shavings	1.67½	—
No. 2 Fly Leaf Shavings	1.12½	—
No. 1 Groundwood Fly Leaf Shavings	1.25	—
No. 2 Groundwood Fly Leaf Shavings	.90	—
Mixed Colored Shavings	.75	—
New Manila Envelope Cuts, one cut	2.87½	—
Hard White Envelope Cuts, one cut	3.37½	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	—
Mixed Kraft Env. & Bag Cuttings	2.75	—
Kraft Envelope Cuttings	3.25	—
No. 1 Heavy Books & Magazines	1.92½	—
New Manila Envelope Cuts, one cut	2.87½	—
New Manila Envelope Cuttings	2.65	—
White and Colored Tabulating Cards	2.25	—
Ground Wood Tabulating Cards	1.35	—
White Blank News	1.65	—
No. 1 Assorted Old Kraft	1.75	—
No. 1 Mixed Paper	.95	—
Overissue News	1.10	—
Box Board Cuttings	.72½	—
New Corrugated Cuttings, Kraft	2.25	—
Old 100% Kraft Corrugated Containers	1.75	—
Old Corrugated Containers	1.40	—
Jute Corrugated Cuttings	1.07½	—

Bagging

(F. o. b. Boston)

Gunny Bagging—		
Foreign	(nominal)	
Domestic	2.75 @	2.90
Sisal Rope No. 1	*4.75	—
Sisal Rope No. 2	* —	4.00
Mixed Rope	—	1.35
Transmission Rope—		
Foreign	(nominal)	
Domestic	2.75	3.00
Manila Rope—		
Foreign	(nominal)	
Domestic	5.75	—
Soft Jute Rope	4.50	5.00
Jute Car Threads	3.00	3.50
Bleachery Burlap	8.50	9.00
Scrap Burlap—		
Foreign	(nominal)	
Domestic	3	3.25
South American	—	3.25
Wool Tares—		
Foreign	(nominal)	
Domestic	4.25	—
Aust. Wool Pouches	—	1.65
New Zealand Wool Pouches	—	1.10
New Burlap Cuttings	4.75	1.10
Heavy Baling Bagging	4.00	4.25
Paper Mill Bagging	2.50	1.10
No. 2 Roofing Bagging	1.35	—

*OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—		
New Light Prints	.04½ @	.04½
Fancy Percales	.04½	.04½
New White No 1.	.06½	.07
New Light Flannelettes	.05½	.06
Canton Flannels, Bleached	.06	.06½
Underwear Cutters, Bleached	.06½	.06½
Underwear Cutters, Unbleached	.05½	.06
Silesias No. 1	.06	.06½
New Black Silesias	.03	.03½
Red Cotton Cuttings	.03½	.04
Soft Unbleached	.06½	.06½
Blue Cheviots	.05½	.06
Fancy	.02½	—
Washable	.02½	—
Khaki Cuttings	.02½	.03
O. D. Khaki	.03½	.03½
Corduroy	.03½	.03½
New Canvas	.06½	.06½
U. V. D. Cuttings	.06½	.06½

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—		
Repacked	3.80 @	—
Miscellaneous	3.20	—
White No. 2—		
Miscellaneous	2.65	—
Twos and Blues, Repacked	2.20	—
Old Blue Overalls	2.25	2.30
Thirds and Blues, Repacked	2.20	—
Miscellaneous	1.80	—
Black Stockings	3.50	4.00
Roofing Stock—		
No. 1	1.55	—
No. 2	1.45	—
No. 3	1.35	—
No. 4	1.35	—
No. 5, Quality A	1.35	—
Quality B	1.20	—
Quality C	.95	—
*Old Manila Rope	5.75	—

*OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—		
No. 1 Hard White Envelope Cuts, one cut	1.37½	—
No. 1 Hard White Shavings, unruled	2.87½	—
No. 1 Soft White Shavings	2.50	—
No. 1 White Ledger	2.30	—
No. 1 Heavy Books & Magazines	1.92½	—
White Blank News	1.65	—
Mixed Kraft Env. & Bag Cuttings	2.75	—
No. 1 Assorted Old Kraft	1.75	—
Overissue News	1.10	—
No. 1 News	1.00	—
No. 1 Mixed Paper	.95	—
No. 1 Roofing Rags	1.35	—
No. 1 Roofing Bags	1.45	—

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"A company of substantial position in the industry wishes to know of several young men, chemists and chemical engineers, of high order of technical education and of some proved ability in research and development, who are interested in making professional careers for themselves limited only by their own abilities.

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Address Box 45-335 care Paper Trade Journal. JL-19

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Specializing in Paper Mill Personnel
Positions Now Open

Assistant to general manager paper mill
Industrial relations managers and assistants, employment and personnel managers and assistants
Kraft mill superintendent
Man for Hamblett sheeting machines $75.
Board and felt mill managers and superintendents
Finishing superintendent
Sales manager kraft papers and specialty boards
Mechanical engineer with paper mill experience for special sales work
Laboratory men (several)
Chemist paper bag plant
Mechanical and plant engineers, master mechanics, draftsmen, designers, time study and production men
Accountants and office men
Technical directors (several)
College graduate for control and inspection work to develop into mill superintendent
Foreman wood handling operations
Machine tenders, back tenders, fourth hands, beater engineers, tour boss (several)
Chemists and chemical engineers

We invite correspondence (strictly confidential) with employers seeking personnel and men seeking new positions. J-28

Wanted paper salesman to represent a paper converting mill in eastern Pennsylvania territory. We prefer one who has had some experience with the paper jobbing trade, and who resides in or about Philadelphia. In replying, please state qualifications. Address Box 45-345 care Paper Trade Journal. JL-5

SUPERINTENDENT for finishing department in large modern midwestern paper converting plant. Must be expert in laminating and coating of paper, plating, stack and friction calendering, and have a good chemistry background in paper and related materials. Knowledge of water-proofing of paper and application of lacquer and plastic coatings necessary. Address Box 45-210 care Paper Trade Journal. TF

WANTED—CHIEF CHEMIST for pulp and paper mill located on Pacific Coast. Apply in own handwriting giving references, experience and other pertinent information. Address Box 45-243 care Paper Trade Journal. TF

MACHINE TENDER for cylinder machine operations. Must be experienced at this particular kind of machine operations. Prefer high school graduate or equivalent. Address Box 45-293 care Paper Trade Journal. TF

WANTED—Young Chemist with some pulp paper laboratory experience for testing and development research assistance. Essential war industry in South. Give training and experience, age, draft status, salary expected. Replies confidential. Address Box 45-331 care Paper Trade Journal. J-28

WANTED—Paper Bag Machine Adjuster. High hourly rate, over time. Post war employment. State experience. Address Box 45-343 care Paper Trade Journal. Jl-5

HELP WANTED for New England Book and Specialty Mill—Fourdrinier Machines:—6 Backtenders, 6 Thirdhands. Address Box 45-352 care Paper Trade Journal. Jl-19

HELP WANTED

WANTED—Art Director; Must prove executive ability and exceptional creative talent, expanding organization, experience necessary in retail package design, must be well versed in printing. Fully outline qualifications and name salary. Man or woman. Address Box 45-361 care Paper Trade Journal. J-28

WANTED—Draftsman for large board mill in mid-west. Permanent position with excellent post war future. Give age, education and experience. Address Box 45-368 care Paper Trade Journal. J-28

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SALESMAN for large folding carton and specialty manufacturer. Unusual opportunities. Give full qualifications, age and draft status. Replies held in strictest confidence. EMPIRE BOX CORPORATION, GARFIELD, N. J. A-2

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HELP WANTED

PULP SALESMAN—Young man with knowledge of woodpulp and its uses in well established sales organization. Apply giving experience, salary, etc. Address applications to Box 45-374 care Paper Trade Journal. J-28

JUNIOR ACCOUNTANT—In office of paper mill. Good post war opportunity. State qualifications, age, salary, references. Wallomsac Paper Mills, Inc., 25 Vanderbilt Avenue, New York 17, N. Y. J-28

WANTED—Machine Tender, Master Mechanic, Beater Engineer. Middle aged men preferred. Small .009 straw mill, slow running machines. Keuka Paper Corp., Pen Yann, N. Y. J-12

MACHINE ERECTOR & DEMONSTRATOR —preferably with experience in paper mill or paper converting machinery such as waxing, corrugating printing, roll winding, slitting, etc.; must have thorough all around machinist experience. Good post-war opportunity. State age, experience, salary expected. Address Box 45-375 care Paper Trade Journal. TF

PAPER SPECIALISTS—In various fields to work on fee basis. Important research organization requires outside assistance. State qualifications, specialty, background and references. Address Box 45-380 care Paper Trade Journal. J-28

WANTED—Technical Director for two-machine mill located in mid-west producing bleached paper specialties. Must understand bleaching, refining and handling of personnel. Give full information on education, previous experience and salary expected. Address Box 45-378 care Paper Trade Journal. J-5

WANTED—Chemist, experienced in all laboratory phases of paper mill control including all testing of pulp for strength, bleachability, etc., as well as control in the plant. Give full details and information on past experience with salary received, family status and wages expected. Address Box 45-379 care Paper Trade Journal. J-5

SITUATIONS WANTED

CHEMIST,
CHEMICAL ENGINEER, Ph.D.
(Cellulose and Organic)

with 10 years experience in operations in Sulphite, Sulphate, Soda and Rag pulp mills and bond, book, wrapping, glassine, cigarette and rag papers. Last five years in control and development of process and equipment. Special studies and operation on cooking, bleaching stock preparation of above pulp grades. Qualified in development and operation of Sulphite and Kraft process heat and chemical recovery and equipment. Chlorine and alkali plant experience and control. At present employed, but desire change as Technical Director, Chief Chemist, Supt. Best of credentials.

Address Box 45-337 care Paper Trade Journal. J-28

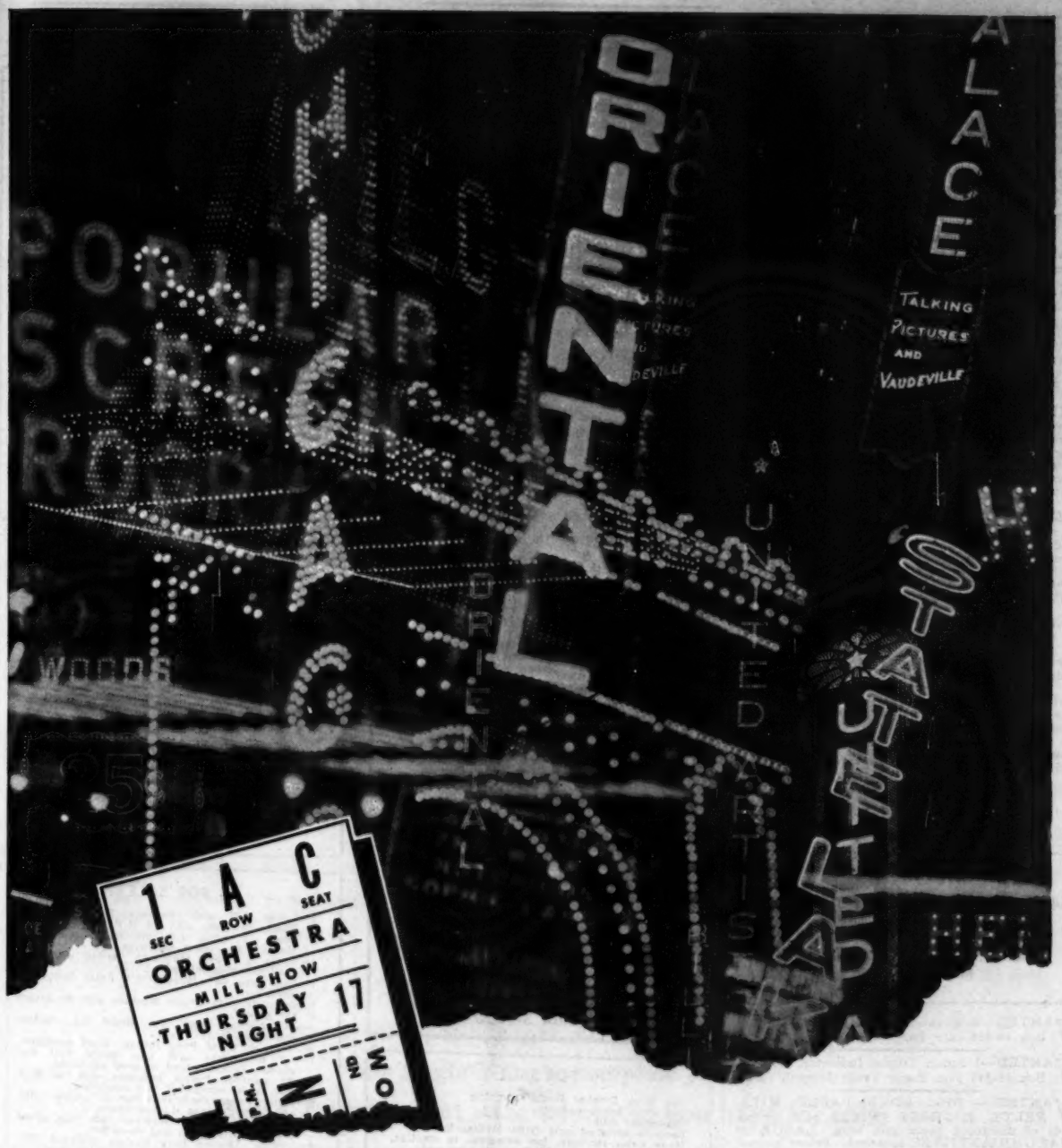
DEVELOPMENT CHEMIST—
SALES SERVICE ENGINEER

with proven ability desires position with progressive organization as research and/or sales associate. Has fundamental and practical knowledge of paper making, converting, and specialty treatments. Conscientious, creative and aggressive. Exceptional record in new product development and technical selling. Address Box 45-350, care Paper Trade Journal. JL-5

PRODUCTION MAN—32. Thoroughly experienced in production, supervision and merchandising of envelopes, papeteries, fine stationery. Available at once. Address Box 45-324, care Paper Trade Journal. Jl-5

BOARD MILL SUPERINTENDENT—Available immediately; 15 years experience in two large two-machine mills manufacturing all grades of folding board and test liners; age 44; fully qualified to handle help; full particulars upon request. Address Box 45-366 care Paper Trade Journal. Jl-12

MECHANICAL ENGINEER—Paper, Pulp and Board Mill experience. Professional and Structural Engineer. Experienced design, construction, cost estimator, heat balances, steam utilizations, economic studies, process works. Can take charge of post war development. Address Box 45-371 care Paper Trade Journal. J-12



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SITUATIONS WANTED

BOARD MILL MANAGER—Available July 1st. Capable of constructing as well as operating. Splendid education. Unimpeachable character, Can build smooth working organization. Seeks large assignment. Address Box 45-347 care Paper Trade Journal. J-28

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PAPER CONVERTING FOREMAN—18 years experience paper cutting, straight and die cutting. Many years successful handling of men. Seeks position Metropolitan Area. Address Box 45-278 care Paper Trade Journal. J-28

14 YEARS paper converting experience, thoroughly familiar with manufacture of wax-oil paper, aniline printing, envelopes, papeteries. Post war ideas. Chemical experience. Address Box 45-325 care Paper Trade Journal. J-28

SUPERINTENDENT—20 years experience in paper bag conversion of grocery, sacks and aniline or oil ink specialty bags. Capable of handling all bag shop problems. Thorough experience in supervision of help, maintenance and repairing of machines. Address Box 45-355 care Paper Trade Journal. J1-5

GENERAL SUPERINTENDENT — One or more mills. Now employed, but available in 30 days. Prefers high grade fourdrinier papers. Familiar with and have installed deinking systems. Good organizer. Technical training. Replies confidential. Address Box 45-348 care Paper Trade Journal. J-28

BEATER ROOM SUPERINTENDENT and expert color man, who knows beating of rag and sulphite papers, is available on short notice. Now employed. Address Box 45-349 care Paper Trade Journal. J-28

SALES EXECUTIVE—High type, university education, broad background, all phases, both merchandising and manufacturing in whole pulp and paper industry. Well able to handle any assignment. Age 44. Address Box 45-342 care Paper Trade Journal. J-28

WANTED

WANTED

4 to 6 Cylinder Machine, trimming about 68" or wider.

Shartle Brothers Machine Co.
Middletown, Ohio

J-28

WANTED—Brightwood Box Machine. Address Box 44-836 care Paper Trade Journal. tf

WANTED—1 Steam Engine Indicator. Address Box 45-344 care Paper Trade Journal. J-28

WANTED — DISCARDED PAPER MILL FELTS. HIGHEST PRICES paid for all kinds of discarded paper mill felts. LARGE or SMALL QUANTITIES accepted. Prices quoted immediately on receipt of samples. ADDRESS: GLASER AND YOFFE, INC., 80 NORTH MAIN ST., NATICK, MASS. TF

WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic Presses, Sheridan Presses, Dryers. Address Box 44-835 care Paper Trade Journal tf

WANTED — Paper Machine Drives, either mechanical or electric. Address Box 45-367 care Paper Trade Journal. J-28

WANTED—250,000 or 500,000 #3 Drug—#24 Dark Blue Laid envelopes. Submit samples and quote prices. Standard Unbreakable Watch Crystals, Inc., 385 Gerard Ave., New York, 51, N. Y. J-28

MANUFACTURERS REPRESENTATIVE

Practical Paper Mill Executive and Salesman located in Central South open for negotiation with Manufacturer of Paper Mill Equipment and Supplies. Address Box 45-336 care Paper Trade Journal. J-28

WANTED

WANTED

4 to 6 cylinder machine with trim from 60" to 86".

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care Paper Trade Journal J-19

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FOR SALE

1—Saveall 36" x 136" Cylinder Mold equipped with anti-friction bearing and couch roll.
1—Shartle Bros. Decker 36" diameter x 60" face including couch roll.
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1—Shartle Brothers Duplex 10 x 20 Stock Pump.
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1—Jones pulper — direct connected to 60 H.P. motor.
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1—12 Plate Flat Screen.
1—18 Plate Flat Screen with scraper.
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1—#4 Roots-Connersville Vacuum Pump.
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Newark 5, N. J.
Bigelow 3-3720 J-28

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One large Breaker Beater complete
One small beater complete
Revamping mill
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1—30" Diameter x 90" Face cylinder mold.
1—8 x 8 Shartle Duplex plunger stock pump
1—New pair cast steel double suspension spring type beater bearings for 8" diameter journal—Noble & Wood beater roll. Never used.
1—New reinforced design lighter beam for 8" diameter journal—Noble & Wood beater roll. Pattern #663. Never used.
1—Used old style lighter beam for 8" diameter journal Noble & Wood beater.
3—200 KVA—33000—2300/4000 volts transformers.
1—250 H. P. slip ring motors & controls—450 R. P. M.—3 bearing base & pulley.
60—62" Face steel dryer felt rolls—1-7/16" journals.
1—20" Face cast iron taper pulley—2-15/16" bore taper 3½" x 29½".
4—36" Diameter x 63" Face dryers.
1—8" to 10" Cox & Sons Pipe threading machine.
1—48" x 48" Noble & Wood beater roll with filling installed.
1—40" Noble & Wood impeller for circulation stock in beater.
A visit to the mill would prove profitable. See our superintendent, Mr. O. P. Fussell at our plant in Walloomsac, New York.

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SLIP RING MOTORS
3 ph. 60 cy.

HP	Make	Speed	Voltage
200	G.E.	240 rpm	2200/440/220
150	G.E.	600 rpm	2200/440/220
150	Westgh.	600 rpm	440/220

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1—120" Hamblet single cutter and layboy, in good condition, with overlapping device for layboy. Layboy holds four piles.
4—Dryers 48" x112", journals about 6" dia.
20—Dryers 60" x 170", with bearings, gears, in excellent condition.
1—61" x 48" Jones beater with wood tub, corrugated bars.

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FOR SALE

1—7-Roll 48" wide Holyoke Super Calender Stack, complete with 50 H.P. G. E. a.c. 3 phase 60 cycle, 220 volt motor equipment. Machine in perfect condition.
1—Noble & Wood Mammoth Jordan with new shell and plug fillings.
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1—Complete Pulp Drying Machine with 60 Dryers 48" x 146".
1—48" Kidder Shear Cut Model S.L. Slitter and Rewinder.
1—Noble & Wood Pony Jordan. Good condition.
1—36" Camachine 44W Low Model Roll Rewinder. Complete and in good condition.
1—#2 Lannoye Pulper complete with 40 H/P A.C. motor equipment, A-1 condition.
2—Toilet Paper Perforators for 81" wide rolls, one Dietz and one Hudson Sharp.
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4—1500-lb. Thorsen Hory Beaters equipped with 150 H/P A.C. motors and speed reducers.

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1—12" x 20" Shartle Brothers Triplex Stock Pumps.
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All above pumps in excellent condition.
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Hendrick Mfg. Co.
Norton Co.
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
United States Rubber Co.

FORMING MACHINES
Downingtown Mfg. Co.
Noble & Wood Machine Co.
Oliver United Filters
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

WHERE TO BUY

GEARS
Black-Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

GRINDERS
Covel-Hanchett Co.
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Montague Machine Co.
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Simonds Worden White Co.
United States Rubber Co.

HEATING, VENTILATING AND AIR CONDITIONING
The Appleton Machine Co.
Armstrong Machine Works
Fibre Making Processes, Inc.
E. D. Jones & Sons Co.
General Electric Co.
Grinnell Company
Leeds & Northrup
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Ross Engineering Corp., J. O.
Shartle Brothers Machine Co.
Valley Iron Works Co.
Worthington Pump & Mchy Corp.

HOISTS
Appleton Machine Co.
Dilts Machine Works
Rodney Hunt Machine Co.
Ingersoll-Rand Co.
E. D. Jones & Sons Co.

HOSE (Air, Water, Suction, etc.)
The Cincinnati Rubber Mfg. Co.
The Manhattan Rubber Manufacturing Division of Raybestos-Manhattan Inc.
United States Rubber Co.

INSTRUMENTS, TESTING AND MEASURING
W. H. & L. D. Betz
N. P. Bowsher
The Bristol Company
Builders-Providence, Inc.
The Foxboro Company
General Electric
W. & L. E. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taber Instrument Corp.
Taylor Instrument Cos.
Wallace & Tiernan Co., Inc.

JORDAN FILLINGS
Appleton Machine Co.
Behr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
Simonds Worden White Co.
Valley Iron Works Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
W. H. & L. D. Betz
Dilts Machine Works
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Taber Instrument Co.
Taylor Instrument Companies
Valley Iron Works Co.

LAY BOYS
Hamblet Machine Co.
Moore & White Co.
Shartle Brothers

LUBRICANTS
Gulf Oil Corporation
Gulf Refining Co.
Sinclair Refining Co.
Socony-Vacuum Oil Co., Inc.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

LUBRICATORS
Hills-McCanna Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Montague Machine Co.
Lobdell Car Wheel Co.
Walker-Goulard-Plohn Co.

MIXERS
Youngstown Welding & Engrg. Co.

MOISTENING EQUIPMENT
The Spray Engineering Co.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Co.
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.
Westinghouse Electric Corporation

PACKING BOXES
Johnson Corporation
Shartle Brothers Machine Co.

PACKING
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
United States Rubber Co.

PAPER MACHINES
Black-Clawson Company
Downingtown Mfg. Co.
Thomas W. Hall Co.
Moore & White Co.
Pusey & Jones
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester

PAPER MACHINE SLICES
Black-Clawson Company
E. D. Jones & Sons Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Thomas W. Hall Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.

PASTING MACHINES
Black-Clawson Company
Davis, Frank H., Co.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John

PERFORATED METAL
Allis-Chalmers Mfg. Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.

PIPE
Black-Clawson Company
Crane Company
Grinnell Company
Shartle Brothers Machine Co.
Taylor Forge & Pipe Works
Walworth Company
Youngstown Welding & Engrg. Co.

PLATERS
Perkins & Son, Inc., B. F.

PLATES
Black-Clawson Company
Hendrick Mfg. Co.
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Timken Roller Bearing Co.

PLUGS
Black-Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.

PRESSES
Black-Clawson Company
Farrel-Birmingham Co.
Dietz Machine Wks.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Rotogravure Engineering Co.
Shartle Brothers
Valley Iron Works Co.
Waldron Corp., John
Weber, Homer C.

PUG MILLS
Traylor Engineering & Mfg. Co.

PULPS
Andersen Co., J.
Bulkley, Dunton Pulp Co., Inc.
Gotteesman & Co., Inc.
Elof Hansson, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.

PUMPS
Allis-Chalmers Mfg. Co.
Black-Clawson Company
Dorr Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Frederick Iron and Steel Co.
Hills-McCanna Co.
Ingersoll-Rand Co.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Noble & Wood Machine Co.
Paper Converting Mch. Co.
Quimby Pump Co. Div. of H. K. Porter Company, Inc.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Warren Steam Pump Company
Worthington Pump & Machinery Corp.

RECOVERY SYSTEMS
Bulkley, Dunton Pulp Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones
Ross Engineering Corp. J. O.
Valley Iron Works Co.

RECTANGULAR BINS
Traylor Engineering & Mfg. Co.

REELS
Black-Clawson Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Hudson Sharp Machine Company
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Behr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
The Hermann Manufacturing Co.
E. D. Jones & Sons Co.
Murray, D. J. Mfg. Co.
Noble & Wood Machine Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout, Waldron & Co.
Sutherland Rafiner Corp.
Valley Iron Works

REGULATORS
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
The Bristol Company
The Brown Instrument Co.
The Foxboro Company
Jones, E. D., & Sons Co.
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Shartle Brothers
Taylor Instruments Companies
Wallace & Tiernan
Westinghouse Electric Corporation

RESINS
American Cyanamid & Chemical Corp.
American Resinous Chemicals Corp.
The Resinous Products & Chemical Co.

ROLLS
Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Improved Paper Machy. Corp.
Lobdell Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
Roehlen Engraving Co.
J. J. Ross Company
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
Sinclair Co.
Smith & Winchester Mfg. Co.
Stearns Magnetic Mfg. Co.
United States Rubber Co.
Valley Iron Works Co.
Waldron Corp., John

ROLL COVERS
The Cincinnati Rubber Mfg. Co.
Youngstown Welding & Engrg. Co.

ROLL STANDS
Cameron Machine Co.
Johnstone Eng. & Machine Co.
The Kohler System Company
Moore & White Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.

ROTARY KILNS
Traylor Engineering & Mfg. Co.

SATURATING MACHINES
Black-Clawson Company
Moore & White Co.
Noble & Wood Machine Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman C.

SCALES
Builders-Providence, Inc.
Merrick Scale Mfg. Co.

SCREEN PLATES
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Union Machine Co.
Union Screen Plate Co.

SCREENS
Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Co.
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Harrington & King Perforating Co.
Hendrick Manufacturing Co.
E. D. Jones & Sons Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
Valley Iron Works Co.

SCRUBBERS
Traylor Engineering & Mfg. Co.

SHEET MACHINES
Thomas W. Hall Co.
The Hermann Manufacturing Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
Valley Iron Works Co.

SHOWER PIPES
Bird Machine Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
Improved Paper Machy. Corp.
Moore & White Co.
Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

SHREDDERS
Bauer Brothers Co.
Carthage Machine Co.

SIZING
American Cyanamid & Chemical Co.
American Resinous Chemicals Corp.
Black-Clawson Company
The Dow Chemical Co.
du Pont, E. I., de Nemours & Co.
National Oil Products Co.
Paper Makers Chemical Department, Hercules Powder Co.
Pioneer Salt Company
Socony-Vacuum Co.
Philadelphia Quartz Co.

SLITTERS
Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Company
Johnstone Eng. & Machine Co.
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Simonds Worden White Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

SPRAY NOZZLES
The Spray Engineering Co.

STAINLESS STEEL
Allegheny Ludlum Steel Co.
Eastern Stainless Steel Corp.
Industrial Steels, Inc.

STARCH
American Cyanamid & Chemical Corp.
Clinton Co.
National Starch Products, Inc.
Stein, Hall & Co., Inc.

WHERE TO BUY

STEAM SPECIALTIES
Johnson Corp.
Shartle Bros. Mch. Co.
Sickles Steam Specialties Co.

STRAPPING & STRAPPING MACHINES
The Stanley Works

STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

SUCTION BOXES
Black-Clawson Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Westinghouse Electric Corp.

SULPHUR
American Cyanamid & Chemical Corp.
Stauffer Chemical Company
Texas Gulf Sulphur Co.
Witco Chemical Company

SULPHUR BURNERS
Valley Iron Works Co.

TALC
American Cyanamid & Chemical Corp.
W. H. Loomis Talc Corp.
International Talc Company

TANKS
Frederick Mfg. Co.
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
The Noble & Wood Machine Co.
H. K. Porter Company Inc.
Rodney Hunt
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
United States Rubber Co.
Waldron Corp., John
Youngstown Welding & Engrg. Co.

THICKENERS, DECKERS & SAVEALLS
Bird Machine Company
Bulkley, Dunton Pulp Co. Inc.
Carthage Machine Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

TITANIUM
E. I. Du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.
Witco Chemical Company

TOOLS
Acme Steel Company
Ingersoll-Rand Co.
The Stanley Works
Walworth Company

TRUCKS
Elwell Parker Electric Co.
Wright-Hibbard Ind. Elec. Truck Co.

TRAPS
Armstrong Machine Works
Crane Co.
Grinnel Company
Johnson Corporation
Shartle Bros. Mch. Co.

TUBS
Rodney Hunt Machine Co.
Noble & Wood Machine Co.
Shartle Brothers
Valley Iron Works Co.

TURBINES
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co
Westinghouse Electric Corp.
Worthington Pump & Machinery Corp.

USED EQUIPMENT
Frank H. Davis Company
Gibbs-Brower Co.
Thomas W. Hall Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
Shartle Brothers Machine Co.

VALVES
The Bristol Company
Crane Company
Dilts Machine Works
Fibre Making Processes, Inc.
The Foxboro Company
Hills-McCanna Co.
E. D. Jones & Sons Co.
Kennedy Valve Mfg. Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co
The Permutit Company
William Powell Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Taylor Instrument Companies
Valley Iron Works Co.
Walworth Company

VATS & VAT PARTS
Union Machine Co.
Union Screen Plate Co.

WASHERS
Bird Machine Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

WATER CONDITIONING
The Permutit Company

WAXING MACHINERY
Black-Clawson Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

WELDING EQUIPMENT
Allis-Chalmers Mfg. Co.
General Electric Company
Walworth Company
Westinghouse Electric Corp.

WET MACHINES
Black-Clawson Co.
Carthage Machine Co.
Downingtown Mfg. Co.
Moore & White Co.
Montague Machine Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

WINDERS AND REWINDERS
Black-Clawson Company
Cameron Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Langston Co., Samuel M.
Johnstone Eng. & Machine Co.
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Potdevin Machine Co.
Pusey & Jones Corp.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Waldron Corp., John

WIRES
Appleton Wire Works
Black-Clawson Company
Bulkley, Dunton Pulp Co. Inc.
Cheney Bigelow Wire Works
Hayden Wire Works
International Wire Works
Lindsay Wire Weaving Co.
Shartle Brothers Machine Co.

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